A Home-Based, Self-Administered, High-*p* Intervention for Noncompliant Behaviour in Children with a Developmental Disability.

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Abstract

Many studies have examined the use of high-probability (high-*p*), behavioural momentum, or interspersed request techniques to improve behavioural compliance with requests in individuals who experience developmental disabilities. Of these studies, few have examined the use of the these techniques within the home environment. Ducharme and Worling (1994) conducted a study which successfully used a high-probability request procedure to increase compliance with parental requests, and with the use of a stimulus fading procedure produced successful maintenance of these increases. This study attempted to replicate and extend the findings of Ducharme and Worling (1994) by incorporating the high-*p* and stimulus fading procedures used into a written workbook which parents then implemented and managed by themselves. A single-case multiple-baseline across-behaviours design, including stimulus fading and follow-up components was employed. Three replications with three different families were completed. Results provided tentative support for the findings of Ducharme and Worling (1994) and established that parents could effectively manage and implement the procedures in a workbook format by themselves.

Section 1

Introduction

1.1 Why Teach Compliance?

Noncompliance has been cited as one of, if not *the*, most frequently reported problems in both individuals who develop normally and in individuals with a developmental disability (Englemann & Colvin, 1983; Forehand, Rogers, Steffe & Middlebrook, 1984; Houlihan, Sloane, Jones & Patten, 1992; Walker, 1993; Wierson & Forehand, 1994; to name but a few) as it presents parents, educators and trainers with serious management problems (Schoen, 1983). Society is based on the basic premise of compliance with rules, laws and mores. A break down of compliance within the home, family, or school may, and often does, have serious ramifications both immediately, and later in life.

Noncompliant behaviour has been characterised in many different ways including disobedient, negativistic, deviant, oppositional or uncooperative behaviour following the issue of a request (Schoen, 1983). Commonly though, noncompliance refers to the failure of a child to follow a parental [or adult] request (Houlihan et al., 1992). Noncompliant behaviour itself can be seen to take any of the following three forms: a) no response, b) no response is given within a specified time, or c) the performance of some other non-requested behaviour (Walker, 1993). In children with normal development, noncompliant behaviour can range from failure to follow a request through to 'active' refusal resulting in disruptive behaviour. In children who experience a developmental disability however, noncompliant behaviour typically refers to failure to follow an instruction (Walker, 1993).

Teaching a child to be compliant with parental requests is an important aspect of socialisation, as children learn to appropriately respond to the people and the world around them (Herbert, 1987). Socialisation is a gradual process which takes place during thousands of interactions with parents and other people as children grow and mature. It is through these interactions that children learn both subtle and complex social skills such as listening, turn taking, sharing, caring and cooperation (Patterson & Forgatch, 1987), all of

which require compliance to varying degrees. Children who fail in the development of social skills such as these have been labelled as "socially handicapped" (Patterson & Forgatch, 1987). Learning to become compliant with parental requests is therefore important because it allows the development of socially acceptable behaviours and responses.

In a child's early years, parents and caregivers are the major agent in the socialisation process. It is these people who provide many of the learning opportunities and teach many of the living, self-help, and social skills a child requires to adequately function in the 'outside world'. Within a typical family this socialisation process occurs as part of everyday life. However, the parents or caregivers of children with a developmental disability often have to adapt normal family practices, social interactions and routines (such as shopping, eating out, visiting people, cooking, cleaning, etc) to accommodate the special needs of their child, and allow all family members to participate in these learning opportunities (Powers, Singer, Stevens & Sowers, 1992). This process has been described as adapted normalised socialisation (Singer & Irvin, 1990 in Powers et al., 1992) and is important as it provides children with developmental disabilities the opportunity to develop the skills they require to function in the home and community later in life.

Providing children with access to learning opportunities can become increasingly difficult however when disruptive behaviour such as noncompliance occurs (Powers et al., 1992). Disruptive and general noncompliant behaviour can restrict access to possible learning opportunities as it will make access to similar opportunities less likely in the future. Furthermore, noncompliance can also reduce the potential for children to learn new relevant skills from these opportunities, as they act disruptively rather than attempt to complete these activities, skills or tasks for themselves (Kushlick, Hubert & Smith, 1986).

As well as reducing access to important learning opportunities, noncompliance within the home environment can also lead to parental stress and frustration (Kushlick et al., 1986). Within any family environment certain pressures exist in relation to the day to day functioning of the household. These include (but are by no means limited to) periods where time is a precious commodity, such as getting children ready for school in the morning, during meal preparation and eating times, bed time and other times when tasks, in addition

to the supervision of children, need to be performed. During these periods noncompliance with simple parental requests can add to pressures and stress that already exist within the family (Richman, Harrison & Summers, 1995).

Increased stress and pressure on the family which results from noncompliance can lead to friction, anger or frustration, and increase the possibility of parental violence or child abuse (Rodriques & Murphy, 1997; Webster-Stratton, 1990). Noncompliance can also increase the time required to perform tasks, reducing time which would otherwise be spent on other family activities. This in turn may lead to adjustment problems in other siblings, and may possibly strain marital relationships (Meyer & Evans, 1989). If a child is noncompliant or displays other disruptive behaviour, it may decrease the amount of help parents might possibly expect from relatives or friends (e.g., to look after the children) and from other community agencies such as teachers, care providers, etc (Meyer & Evans, 1989). Increasing the likelihood of compliance with parental requests, therefore, has the potential to increase the overall well-being and functioning of the family unit, improve relationships between all family members and reduce the possibility of violence or abuse.

As mentioned above, noncompliant and disruptive behaviour can restrict opportunities to learn relevant self-help and social skills. This situation is however not restricted to the home environment. It is believed that deficits in social skills at school may also impede the formation and development of social relationships with peers and teachers, and can also impair interactive skills with these people (Killu, Sainato, Davis, Ospelt & Neely Paul, 1998; Margalit, 1993). This in turn can effect the quality and quantity of the academic learning experiences the child encounters within the school environment (Gelfand, Jeson & Clifford, 1997; Margalit, 1993).

The importance of adequate social skills and the absence of behaviour problems is also a significant consideration for the placement of individuals with developmental disabilities in community residential care or work environments. The presence of behavioural problems such as aggression and/or severe noncompliance and a lack of social skills can jeopardise such community placements (Huguenin, 1993). Behavioural problems such as noncompliance and aggression can also lead to social ostracism and segregation within

institutions, and may possibly limit access to activities available to the individual (Montgomery, 1993).

Noncompliance is therefore a major obstacle which children must overcome in order to promote optimal development. It is important for children to develop acceptable levels of compliant behaviour at both home and school, as noncompliance can become a major difficulty which can limit a child's opportunities to learn and develop many of the important skills they will require to adequately function within the wider environment. Noncompliance can also impede the development of many of the social skills which result from, and also allow access to these learning opportunities. Finally, the development of compliant behaviour may lead to a reduction of stress and tension within the family unit.

Early development of compliant behaviour is therefore an important and necessary element for the successful development of relationships, and social and practical skills. Teaching or facilitating compliant behaviour and reducing problematic noncompliance in children then becomes an important goal of behaviour modification. The development of acceptable levels of compliant behaviour in children with a developmental disability will assist in ensuring optimal development within safe, caring and supportive environments, enhancing the ability of children to function to their full potential in their adult lives.

1.2 Management of Noncompliance in Individuals with a Developmental Disability.

As behavioural noncompliance represents one of the largest problems for people who experience a developmental disability, research into noncompliance is therefore of great importance. Many behavioural treatments for noncompliance have been tried in the past, with mixed success (Walker, 1993). Researchers have tried many different ways to expand the repertoire of behavioural interventions and strategies for the treatment of noncompliance. These interventions include both nonaversive (such as various reinforcement, stimulus based, functional analysis and self-management procedures, see Carr, Robertson, Taylor & Carlson, 1990; Houlihan et al., 1992 for descriptions) and aversive procedures (including various punishment procedures such as brief restraint, response cost, time-out, guided compliance, overcorrection, etc see Houlihan et al., 1992; Meyer & Evans, 1989 for descriptions). Other more generalised procedures have been

developed for use in the classroom (see Engleman and Colvin, 1983) and also parent-managed procedures developed for use in the home environment (see Breiner, 1989; Breiner & Beck, 1984).

Earlier research tended to focus on aversive interventions (such as those listed above) to treat maladaptive behaviour. In more recent years however, the focus has shifted towards the use of nonaversive procedures in the management of behavioural problems (Munk & Repp, 1994). This shift can partly be attributed to a great deal of debate within the literature which centres around ethical considerations and the appropriate use of nonaversive interventions (and aversive interventions) for the treatment and management of severe behavioural problems (McDonnell, 1993; Munk & Repp, 1994)[1].

The use of nonaversive procedures in promoting behaviour change are seen to be preferable over aversive methods for several reasons. Briefly, nonaversive procedures are a) humane and values-based, b) are socially valid, c) are legal, d) are practical, and e) contribute to positive attitudes toward individuals with disabilities (Meyer & Evans, 1989). Furthermore nonaversive procedures have equal to or greater empirical validity than aversive procedures, and are more likely to result in successful behavioural outcomes (Meyer & Evans, 1989; McDonnell, 1993; Munk & Repp, 1994). Generally, aversive procedures are now only considered acceptable for severe problem behaviours which have proven resistant to other interventions (McDonnell, 1993).

Recent research into nonaversive procedures for the management of behaviour problems in individuals with developmental disabilities has focused on environmental antecedent factors that may influence or result in maladaptive behaviour (Cipani & Spooner, 1997; Mace & Shea, 1990; Munk & Repp, 1994; Singh, Oswald & Ellis, 1995). Among these stimulus-based strategies is a set of procedurally similar pro-active and non-aversive techniques which serve to increase compliant behaviour without the need for direct physical manipulation or contact. These procedures have been referred to as behavioural

[1] This debate has resulted in the establishment of ethical guidelines and policies concerning the use of aversive and nonaversive procedures by many national and international organisations (McDonnell, 1993). Thorough discussion of these debates and the resulting ethical guidelines is outside the scope of this Thesis. The reader is encouraged to consult Meyer & Evans (1989) and Repp & Singh (1990) for a list of policies and ensuing discussion in this area.

momentum, pre-task or interspersed requests, or high-probability (high-*p*) request techniques and have received considerable attention in the literature[2].

The high-*p* (and other generically similar) techniques facilitate compliance by manipulating antecedent conditions prior to the issue of a request. This is achieved by presenting a set of instructions to the noncompliant individual with which they will normally comply (high probability or 'high-*p*' requests). The set of high-*p* requests is then closely followed by a request to which noncompliance usually occurs (a low probability or 'low-*p*' request). As a consequence of issuing the set of high-*p* requests, compliance with the low-*p* request has been found to increase, sometimes substantially.

Research into the behavioural momentum procedures has been extensive. This research has shown these procedures to be extremely effective in increasing compliance with a wide variety of requests, across a wide range of settings and age groups. In addition the procedure has also been effective in decreasing severe behaviour problems that occur in conjunction with noncompliance.

The following review will examine this literature in detail. It will briefly cover the theoretical background of the procedures and examine their application to a variety of compliance problems. It will then draw conclusions and suggest possible avenues for future research. It is not the intention of the following review to explore methodological flaws in an overly critical fashion, but to emphasise strong points in the research, and make suggestions of how to further develop this technology and how it may better be applied in the community.

[2] For the purposes of this Thesis these techniques will be generically referred to as 'high-*p*' techniques.

Section 2

Literature Review

2.1 Introduction

For over a decade now applied experiments and studies have been conducted which have explored the use of high-*p* techniques to treat noncompliant behaviour. The majority of this research has been conducted with children, adolescents and adults who experience developmental disabilities.

An electronic search of Current Contents, Eric, Medline and Psychlit produced 22 references to individual studies plus numerous reviews of the literature and references to the techniques listed above[3]. This research has been summarised in Table 1. In this table the aims of these 22 studies, the participants, independent variables, consequences, results, and the results of any maintenance and generalisation of treatment gains have been tabulated. The information in Table 1 is reported in a similar format to that in an earlier review of the high-*p* literature by Davis and Brady (1993). However, Davis and Brady's review of the literature in now incomplete as it preceded the publication of a great deal of research involving the high-*p* procedure. This current review of the literature carries a different focus to that of Davis and Brady (1993), and extends their work to incorporate more recently published studies.

An examination of the studies presented in Table 1 quickly identifies several distinct areas of research that has been conducted using various high-*p* procedures. Firstly there are the early studies which developed the procedures surrounding the use of the high probability request sequence (Mace, Hock, Lalli, West, Belfiore, Pinter & Brown, 1988; Singer, Singer & Horner, 1987). Subsequently, numerous studies have been conducted which have explored, expanded and limited the use of high-*p* procedure with various behaviour disorders.

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[3] As at 1 November, 1999.

TABLE 1. Summary of Applied Behavioural Momentum, High-p, Pre-Task Requests and Interspersed Requests Studies

Study	Summary / Aims / Dependent Var.	Participants	Independent Var.	Consequences	Results	Maintenance	Generalisation
Singer, Singer & Horner (1987).	To increase frequency of compliance to teacher request "Go to group now" to aid transition from one task to another	4 Ss Aged 7-10 Y/O 3 male; 1 female 2x Downs; 1x Foetal Alcohol Syndrome; 1x Tuberous Sclerosis IQ range 20-44 Extensive histories of noncompliance and aggression.	Pre-task requests - 3 requests requiring less than 3 sec to complete eg. "give me five", "shake hands", "say your name".	Verbal praise given for compliance. Reminder in 'firm voice' and/or physical guidance for noncompliance (not required).	Increased compliance across all 4 Ss.	Return to baseline when pre-task requests withdrawn.	No data collected.
Mace, Hock, Lalli, West, Belfiore, Pinter & Brown (1988).	Expt 1. Increase compliance to 'do' and 'don't' requests. Expt 2. Increase compliance to requests using high-*p* vs. attention control statements. Expt 3. Same as expt 1 except with varying inter-prompt times. Expt 4. Reduce latency to completion of task. Expt 5. Reduce time to take shower, reduce off task behaviour.	Expts 1&3. Male 36 Y/O; IQ=42; History of noncompliance & aggression Expt 2. Male 44 Y/O; IQ=21; Downs. Expt 4. Two males 1) 34 Y/O; IQ=53; Downs; engaged in stereotypy; slow to engage tasks; and 2) 45 Y/O; IQ=47; grand mal seizures; psychotic behaviour; slow to engage tasks. Expt 5. Same as subject 2 in expt 4.	Expt 1. Presenting 3 or 4 high-*p* requests Expt 2. As above plus attention control statement Expt 3. Same as expt 1 but with 5 or 20 sec inter-prompt times. Expt 4. Same as expt 1 plus attention control statements Expt 5. Same as expt 1 vs. prompts and contingency management procedures.	In all experiments descriptive praise for instances of compliance. No consequence reported for noncompliance.	Expt 1. Reduced noncompliance. Expt 2 Using high-*p* increased compliance. Expt 3. Increased compliance with 5 sec inter-prompt time. Expt 4. Decreased latency with high-*p*. Expt 5. Decreased duration to take shower with high-*p*.	No data collected.	No data collected.
Harchik & Putzier (1990).	To assess if the high-*p* sequence can increase compliance to take prescribed oral medication to treat grand mal seizures.	1 female subject; 23 YO; severe intellectual handicap; living in a group home setting.	5 high-*p* requests eg "clap hands", "point to your bed", etc.	Praise plus tokens for token economy for compliance.	Increased compliance to take & decreased spiting out or vomiting of medication.	100% compliance at 6 month follow-up with continued use of the high-*p* sequence.	No data collected.
Mace & Belfiore (1990).	To investigate the effectiveness of the high-*p* sequence to reduce disruptive stereotypic behaviour maintained by escape from task-related demands, and to increase compliance to low-*p* requests.	1 female subject, 38 Y/O, severe intellectual handicap, engaged in stereotypic touching of object & people which interfered with completion of household tasks in group home setting.	Presentation of 3 high-*p* requests at 10 second intervals, plus attention control (neutral) statements presented at 10 second intervals.	'Enthusiastic praise' for all instances of compliance. Ignoring for instances of noncompliance	Decreased stereotypic touching and increased compliance with high-*p* requests only.	No data collected.	No data collected.

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Study	Summary / Aims / Dependent Var.	Participants	Independent Var.	Consequences	Results	Maintenance	Generalisation
Horner, Day, Sprague, O'Brien & Heathfield (1991).	Explored whether a functional relationship exists between high-*p* requests and if Ss will a) attempt to complete a difficult task and b) escape or avoid by using aggression or engaging in self injurious behaviours (SIB). Expts were performed in residential & school settings.	Expt 1. 3 Ss; 2 male; 1 female 12-14 Y/O; IQ 12; 14 & 23 respectively; all had long histories of self-abuse; aggression and destructive behaviour during instruction. Expt performed in group home. Expt 2. Male; 14 Y/O; moderate intellectual handicap; gross motor problem; numerous undesirable behaviours.	Expts 1&2. Presentation of 3-5 interspersed (high-*p*) requests between easy and hard tasks. Expt 1. A new task was presented without interspersed requests with the regular trainer and then with a new trainer.	Expts 1&2. Verbal praise for instances of compliance, plus edible rfr's on VR3 during baseline.	Decreased aggression and self-injury and increased attempts to complete tasks in both experiments.	No data collected.	Expt 1. Reductions in aggression and self-injury with 2/3 Ss with new task. Increased attempts with new task & trainer all Ss.
Davis, Brady, Williams & Hamilton (1992).	Does the high-*p* sequence increase responding in children with severe behaviour disorders? If so, will using multiple trainers promote generalisation to other adults? Will maintenance occur when the high-*p* sequence is removed?	2 male Ss. 1) 7 Y/O; IQ<40; Downs; communicated with sign language; engaged in violent; destructive & stereotypic behaviour when asked to perform a task. 2) 5 Y/O; severe Autism & intellectual handicap; responded to requests with aggressive; dangerous; stereotypic & inappropriate behaviour.	Delivering 3 high-*p* requests prior to a low-*p* request. If no response to a high-*p* request occurred they continued to be delivered until 2 consecutive responses occurred.	Verbal and physical praise and cues that a correct response had been made.	Responses to low-*p* requests increased to a point were responses were made on all trials with all trainers. This occurred with both Ss.	100% responses were made by both Ss on probe trials conducted weekly for 4 weeks.	Responses generalised to trainers who did not issue the high-*p* sequence with both Ss.
Zarcone, Iwata, Hughes & Vollmer (1993).	Explored the high-*p* sequence combined with and without extinction (EXT) to treat SIB maintained by escape.	1 Female S; 33 Y/O; engaged in SIB (head banging) as an escape response from instructions.	High-*p* alone - 3 high-*p* requests High-*p* + EXT - 3 high-*p* requests plus prompts or physical guidance and session continuation. Extinction alone.	Praise followed compliance, prompts or physical guidance followed noncompliance.	High-*p* alone failed to reduce latency to SIB and reduced compliance. High-*p* + EXT increased latency to SIB and increased compliance. EXT alone produced similar results to high-*p* + EXT.	No data collected.	No data collected.
Davis, Brady, Hamilton, McEnvoy & Williams (1994).	Can high-*p* requests increase social interactions of young children with severe disabilities? Will these increases (if any) generalise toward children who do not have a disability?	3 male Ss. 5, 6 & 6 Y/O; all with severe autism; isolated in play and social interaction; displayed stereotypic behaviour.	3-5 high-*p* requests until 3 consecutive responses high-*p* requests were made.	Verbal praise to compliance during baseline and high-*p* phases. In addition gestural praise was given during high-*p*	High-*p* increased Ss responsiveness to initiate social behaviour.	Increased social interaction was demonstrated 6 weeks after prompts were removed.	Social interactions generalised to new peers and to new settings.

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Study	Summary / Aims / Dependent Var.	Participants	Independent Var.	Consequences	Results	Maintenance	Generalisation
Ducharme & Worling (1994).	Explored whether the addition of a fading sequence would promote maintenance of compliance gains with 'do' and 'don't' requests, and whether the high-*p* intervention could be successfully used in a family home using the parents as therapists.	2 Ss. 1) Male; 5 Y/O; mild intellectual handicap. 2) Female; 15 Y/O; severe intellectual handicap.	High-*p* - 3 high-*p* requests. Fading sequence - the number of high-*p* requests was gradually reduced to 1 high-*p* request and then the latency between the low and high-*p* request was increased and a distracter added.	Descriptive praise followed all instances of compliance, noncompliance was ignored.	High-*p* increased compliance to 'do' and 'don't' requests with one subject and with 'do' requests in the other. Increases were maintained during and after fading.	The fading sequence maintained compliance at high levels up to 16 follow-up.	No data collected.
Houlihan, Jacobson & Brandon (1994).	Replicates Mace et al.'s (1988) third expt varying inter-prompt times (5 & 20 sec) between low-*p* and high-*p* requests.	1 male S; 5 years 4 months; autistic; no stereotypic behaviour; appropriate spoken language ability.	3 high-*p* requests able to be performed in under 5 seconds with 5 or 20 sec latency to delivery of the low-*p* requests.	Social rft (visual, physical & verbal) following compliance in high-*p* phase.	Compliance improved with the 5-sec inter-prompt but showed no improvement using the 20-sec inter-prompt.	No data collected.	No data collected.
Rortvedt & Miltenberger (1994).	To assess if the high-*p* sequence is effective in increasing compliance in regular children, assess the function of their non-compliance and compare high-*p* with time out (TO).	2 female Ss; both 4 Y/O; developmentally normal.	High-*p* - 3 high-*p* requests (simple one step commands). Time-out - 1 min exclusionary TO, child had to sit quietly for the last 10 seconds.	Praise for all instances of compliance. Ignoring for noncompliance in high-*p* & TO in the TO phase.	Compliance increased with 1 S with high-*p* but decreased in the other. TO increased compliance in both Ss.	Compliance was maintained at 8 week follow-up using TO for non-compliance.	No data collected.
Zarcone, Iwata, Mazaleski & Smith (1994).	Extended an earlier study (Zarcone, et al., 1993) examining the effects of the high-*p* sequence and EXT both combined and alone to treat escape behaviour negatively reinforced from instructional tasks.	2 male Ss; 38 & 45 Y/O; both with profound intellectual handicaps; both performed SIB head banging (subject 1) & finger biting, face slapping and disruptive behaviour when required to perform tasks.	High-*p* - 3 high-*p* requests. High-*p* + EXT - As above, except session continued if SIB occurred.	Praise followed compliance. Modeling & guided compliance followed noncompliance. EXT followed SIB during High-*p* + EXT	SIB decreased & compliance increased in the High-*p* + EXT phase only. Compliance remained very low (near 0%) in all phases with 1 S.	No data collected.	No data collected.
Kennedy, Itkonen & Lindquist (1995).	Compared the effects on compliance of antecedent interspersed (high-*p*) tasks and social comments. Also examined delay between social comments & the low-*p* task (2 & 15 sec).	2 Ss; 1 male; 18 Y/O; 1 female; 19 Y/O; both with severe disabilities and a history of noncompliance.	Interspersed Requests - 4 high-*p* tasks at 2 sec intervals. Social Comments - social comments eg "it's a beautiful day".	Verbal praise followed compliance to low and high-*p* requests.	Compliance was comparable with both high-*p* and social comments with the 2 sec delay.	No data collected.	No data collected.

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Study	Summary / Aims / Dependent Var.	Participants	Independent Var.	Consequences	Results	Maintenance	Generalisation
Sanchez-Fort, Brady & Davis (1995).	Investigated if high-*p* requests can increase low-*p* communication behaviour (words & signs) and if any increases generalise to other non-trained low-*p* words and signs.	2 female Ss. 1) 8 Y/O; severe intellectual handicap; communicated by pointing, making sounds and using 5 sign words. 2) 4 Y/O; Downs; moderate intellectual handicap; communicated using verbal and sign language.	Three to five high-*p* requests.	Verbal and gestural praise followed all instances of compliance.	Use of training words increased using the high-*p* sequence for both Ss.	No data collected.	1 subject generalised to begin using non-training words.
Davis & Reichle (1996).	To investigate if variant vs. in-variant high-*p* sequences would be more effective in increasing compliance in children who have emotional-behavioural disorders, and if young peers could be taught to implement the high-*p* sequence.	4 Ss; 2 x male (5 yrs 6 mths & 4 yrs 8 mths); 2 x female (5 yrs 11 mths & 4 yrs 10 mths) all with emotional-behavioural disorders receiving special education services. Each child had 3 'intervention peers' who delivered the high-*p* sequence.	Invariant & variant phases - a high-*p* request was made, if compliance occurred a second request followed until 3 high-*p* requests had been made, then the low-*p* request was delivered. In noncompliance occurred a 30 sec pause occurred and then the sequence was continued.	Compliance to the high-*p* request resulted in continuation of the social interaction. Non-compliance resulted in a 30 sec pause. Compliance to low-*p* requests was praised.	Both the invariant & variant requests increased the number of correct responses to requests, however increases to variant requests were larger and did not decrease across the phase as the invariant requests did.	No data collected.	No data collected.
Ellison (1997).	High-*p* requests were used as an addition to a compliance training programme which was in effect for 5 years. Compliance training involved the use of positive reinforcers (rewards & social praise) & guided compliance procedures.	1 female subject, 42 Y/O, severe intellectual handicap, organic personality disorder / intermittent explosive disorder, long history of noncompliance, engaged in maladaptive, aggressive & self injurious behaviours when asked to perform tasks.	In addition to ongoing compliance training, several high-*p* tasks which the subject could already perform were used to assist training in new tasks in the vocational workshop.	Positive reinforcement was given for increased on task performance with the new task.	The combination of high-*p* and compliance training decreased noncompliance, SIB & aggression. Productivity in vocational work increased, self help skills increased.	No data collected.	No data collected.
Mace, Mauro, Boyajian & Eckert (1997).	Three expts were conducted which aimed to 1) examine if higher quality rfrs (food vs. priase) produced greater compliance, 2) examine if the higher quality rfr influences compliance resistance to change and 3)isolated rfr quality and resistance to change in a basic multiple schedule laboratory experiment.	Expt 1 - 2 male Ss; 14 & 16 Y/O; both with autism; both exhibited aggressive disruptive and noncompliant behaviour. Expt 2 - The older subject from expt 1. Expt 3 - 4 experimentally naive rats.	Expts 1 - 3 or 4 high-*p* requests followed by the low-*p* request. Expt 2 - as above with the addition of 5 low-*p* requests following a set of high-*p* requests.	Expt 1 - Compliance resulted in either praise, food or food + praise. Expt 2 - Either food or praise. Expt 3 - Access to either a sucrose or citric acid solution.	Expt 1 & 2 - Both praise and food increased compliance, but food produced greater frequency of compliance. Expt 3 - All rats showed preference for the sucrose solution, 2/4 Ss demonstrated greater resistance to change on sucrose.	No data collected.	No data collected.

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Study	Summary / Aims / Dependent Var.	Participants	Independent Var.	Consequences	Results	Maintenance	Generalisation
Davis, Reichle, Southard & Johnston (1998).	Examined the use of a high-*p* sequence to increase the use of electronic communication aides to initiate conversational or maintain social exchanges.	1 Female subject, 14 Y/O, Downs, severe intellectual handicap, IQ= 46. 1 Male subject, 15 Y/O, spastic quadriplegic (with athetoid components) cerebral palsy. Both communicated using electronic aides.	High-probability statements (obligatory utterances) which reliably generate a response from the subject e.g. "what are you doing tonight?".	Continued social engagement occurred e.g. elaboration of topic of conversation.	The female subject showed a considerable increase in non-obligatory conversations, the male subject showed smaller more variable increases.	Increases in non-obligatory utterances were maintained when the high-*p* statements were removed (female subject only).	The female subject demonstrated generalisation in non-obligatory responses to a communication partner who did not use the high-*p* utterances.
Killu, Sainato, Davis, Ospelt & Neely Paul (1998).	Examined the use of the high-*p* sequence embedded into typical classroom activities to increase compliant responding and decrease disruptive behaviour. Maintenance, generalisation and follow-up measures were also taken.	3 Male Ss, 4 $^{10}/_{12}$, 5 $^{2}/_{12}$, 5 $^{5}/_{12}$ Y/O, all with developmental delay, 1 with cerebral palsy, 1 with autism, all displayed noncompliance and disruptive behaviours, all attended a private non-profit preschool.	3 to 5 high-*p* requests were presented followed by the low-*p* request once 3 consecutive compliant responses occurred. High-*p* requests were individualised for each child. High-*p* requests were removed during the maintenance phase.	Verbal praise followed instances of compliance.	All 3 subjects showed increases in compliant behaviour when the high-*p* sequence was used. Disruptive behaviour also decreased.	Increases in compliance were maintained at 6 week follow-up.	Generalisation of compliant responding was demonstrated with a second trainer up to 6 week follow-up.
McComas, Wacker & Cooper (1998).	Explored the effects of high-*p* requests on a toddler's compliance to a low-*p* request to "hold still" to have his central venous (c-line) site cleaned and changed during his stay in hospital. Initially the toddler interfered with the procedure by touching or pulling out the c-line, kicking or turning away.	1 Male subject, 22 months old, developmental delay and severe SIB. The participant was undergoing treatment and surgery for short bowel syndrome. He had never been away from hospital for more than 2 consecutive weeks since birth.	Condition 1. Involved differential reinforcement of alternative behaviour (DRA) combined with escape extinction (ESC EXT) if necessary. Condition 2. Same as above combined with 3-5 high-*p* requests ('touch head', etc)	DRA consisted of playing with the subject for five seconds if compliance the low-*p* request occurred. Compliance to high-*p* requests resulted in praise.	Percentage compliance to the low-*p* request was consistently higher in the High-*p* + DRA/ESC EXT condition.	No data collected.	No data collected.

Cont\...

Study	Summary / Aims / Dependent Var.	Participants	Independent Var.	Consequences	Results	Maintenance	Generalisation
Ardoin, Martens & Wolfe (1999).	Examined percentage compliance and latency to comply in 3 developmentally normal 'target' children in a regular classroom environment after a series of three high-*p* requests followed by one of five low-*p* request to start a new activity were group delivered to the whole class by the teacher. A fading sequence was employed as a means of transferring stimulus control from the high-*p* to the low-*p* request.	3 children (1 male & 2 female) in a regular 2nd Grade (Year 3) classroom. Ages of the girls were 7 yrs 9 mths and 8 yrs 0 mths and the boys was aged 7 yrs 5 mths. The children were nominated by their teacher as students who generally did not comply with teacher instructions.	HiP-3 Condition. Three high-*p* requests (randomly selected from a group of 12) were issued at no more than 5 sec intervals followed by a low-*p* request. Fading Condition. The number of high-*p* requests was reduced from 3 to 2 to 1 followed by a low-*p* request. Pacing of requests remained at 5 sec.	Verbal praise was given to one or more of the target children and non-target children following compliance to the low-*p* request	Percentage compliance and latency to compliance improved in one of the girls and in the boy. Compliance remained high during the fading sequence. Compliance and latency failed to improve in the remaining girl.	Compliance and reduced latency to comply continued to remain high at 2 and 3 week follow-up.	No data collected.
Smith & Lerman (1999)	Examined and compared the efficacy of guided compliance (including verbal and gestural prompts) and a high-*p* sequence (of 3 high-*p* requests) implemented in a home environment by the mothers of the children concerned. In home training using the procedures was given following baseline measures of compliance. One set of low-*p* requests was used with each procedure. Treatment effectiveness, procedural integrity and parent satisfaction measures were taken.	Two children and their mothers who were referred to an outpatient clinic for treatment of noncompliance participated in the study. The children were both boys aged 4 and 5 Y/O. The first was diagnosed with autism and moderate mental retardation and the other was diagnosed with pervasive developmental disorder NOS and mild mental retardation.	Baseline. Percentage Compliance to low-*p* requests in each set and mean percentage of correctly implemented treatment components for each intervention. High-*p* and Guided Compliance. As above with a 3 request high-*p* sequence for one set and guided compliance for the other. A single reversal probe was also performed on each low-*p* set. Guided Compliance. Treatment conditions were switched so both low-*p* sets used guided compliance.	Verbal praise was given for compliance. With the guided compliance procedure, non-compliance resulted in a 3-step least to most prompt hierarchy with full physical guidance as the third step in the hierarchy.	Compliance to both sets of low-*p* requests was low for both Ss in baseline. Both interventions increased compliance in the treatment phase, with guided compliance producing increased compliance relative to high-*p*. Switching treatments resulted in an increase in compliance to both low-*p* sets. Both procedures were implemented correctly by the boy's mothers.	No data collected.	No data collected.

There are studies which have directly examined the use of the high-*p* procedure to increase compliance in a variety of settings (Ducharme & Worling, 1994; Ellison, 1997; Harchik & Putzier, 1990; McComas, Wacker & Cooper, 1998), and have compared its use with guided compliance (Smith & Lerman, 1999).

A number of investigations have also explored the use of the high-*p* procedure within an educational setting to decrease noncompliant behaviour and increase a variety of social and communication behaviours (Ardoin, Martens & Wolfe, 1999; Davis, Brady, McEnvoy & Williams, 1994; Davis, Brady, Williams & Hamilton, 1992; Davis & Reichle, 1996; Davis, Reichle, Southard & Johnston, 1998; Killu et al., 1998; Sanchez-Fort, Brady & Davis, 1995).

Several studies have been conducted which have aimed to decrease noncompliance in conjunction with other behaviour problems such as stereotypy and self-injurious behaviours (SIB; Horner, Sprague, O'Brien & Heathfield, 1991; Mace & Belfiore 1990; Zarcone, Iwata, Hughes & Vollmer, 1993; Zarcone, Iwata, Mazaleski & Smith, 1994).

Finally, there are a group of studies which have examined procedural aspects and directly question theoretical aspects of the high-*p* procedure (Houlihan, Jacobson & Brandon, 1994; Kennedy, Itkonen & Lindquist, 1995; Mace, Mauro, Boyajian & Eckert, 1997; Rortvedt & Miltenberger, 1994).

This natural division of the literature will be used to create logical sections within the literature review which follows. The studies which fall into each section will be individually reviewed and discussed in turn.

2.2 Genesis - The Creation of a Behaviour Modification Technique.

The first study to appear using a generic form of the high-probability command sequence (or high-*p* sequence) was conducted by Singer et al. (1987). Singer et al. used high probability pre-task requests to reduce problematic noncompliance with requests, as well as to reduce the aggressive behaviour towards teachers and peers some children displayed when returning to the classroom from the playground. The noncompliant and associated

aggressive behaviour displayed was identified as being a major learning barrier for the students.

Singer et al. (1987) sought to investigate an antecedent procedure previously described by Englemann and Colvin (1983) as part of their classroom based generalised compliance training procedure. Englemann and Colvin's compliance training procedure focused on extinguishing noncompliant behaviour and teaching the children to discriminate between the consequences of noncompliant and compliant behaviour and then to generalise these responses. One procedure they suggested to generalise (or transfer) compliant responding in students was to issue pre-task requests. This required the teacher to issue three requests to the student which were considered to have a high probability of compliance, and to provide verbal reinforcement for compliance with each of these requests. The pre-task requests were then followed by a low-probability request. Because the child had already complied with the set of high-probability requests, Englemann and Colvin considered that the child would find it difficult to *not* comply with the low probability request. This is because the child had previously learned to discriminate between the consequences of compliance (reinforcement) and noncompliance (a mild punisher).

Singer et al. (1987) sought to test Englemann and Colvin's (1983) generalisation procedure by presenting three high-probability requests to the students when they returned to the classroom, followed by asking the students to go to their work group (a low-probability activity). Despite the fact the data recording period for the study was relatively brief, results indicated that very high levels of compliance were achieved with all four children when the pre-task request sequence was used. Once the request sequence was withdrawn, unfortunately compliance decreased to baseline levels.

Singer et al.'s study can be considered an important early piece of work, not only because it demonstrated how easy and effective the procedure can be, but also because it stimulated a number of other investigations into the procedure.

At around the same time as Singer et al. (1987) another study was published by Mace et al. (1988) which was procedurally similar to that of Singer et al. but was far more extensive and rigorous in its investigation. Over the years Mace et al.'s study has stimulated a great

deal of interest in the high-*p* procedure as a nonaversive method of decreasing noncompliant behaviour in individuals with a developmental disability.

Mace et al.'s (1988) study can easily be described as the most renowned, influential and controversial study of the high-*p* procedure. This is not only because these authors were responsible for coining the terms high-*p* and low-*p* requests and the high-probability command sequence, but also because they were responsible for associating the term 'Behavioural Momentum' with the high-*p* procedure. This occurred when Mace and his colleagues noted what they perceived as similarities between their applied procedure and the theoretical analogy of behavioural momentum developed by Nevin, Mandell and Atak (1983). In later years this association was to become strongly debated and a highly controversial topic when the theoretical basis of Mace et al.'s high-*p* procedure was examined.

The term behavioural momentum was first described by Nevin, Mandel and Atak (1983) when they outlined an analogy between Newton's First Law of Motion and the properties and strength of discriminated operant behaviour. This was in order to provide an alternative description of the 'strength' of a behaviour. Newton's First Law suggests that a body in motion can be characterised as having a velocity component and a mass component, the product of which is momentum. The larger the mass of an object the less its velocity will be effected when it is acted on by an external force. According to Nevin et al. (1983) behaviour could also be seen as possessing momentum if one considers the velocity component equivalent to response rate and the mass component equivalent to a behaviour's 'Resistance to Change'. Resistance to change is the reluctance of the rate of a behaviour to change when environmental circumstances are altered, for example, the rate at which responding declines when extinction is introduced. Nevin et al. considered that conceptually, a behaviour which displays high resistance to change is stronger than a behaviour which displays low resistance to change.

Nevin et al.'s (1983) work on behavioural momentum in multiple schedules showed that resistance to change (behavioural mass) was influenced by the rate of reinforcement delivered in each component, and that a relatively high rate of reinforcement (contingent or noncontingent) produces greater resistance to change. Mace et al. (1988) hypothesised that

a 'momentum' of compliant behaviour could be established in a similar fashion if a high rate of reinforcement was delivered for compliant responding.

Mace et al. (1988) considered it possible to establish a 'momentum of compliance' by delivering a high (continuous) rate of reinforcement contingent upon completing requests which have a high-probability of compliance (i.e., a high-*p* request). The reinforcer of choice was verbal praise delivered on completion of a request. So, if a series of requests is made which the participant has a reliable history of completing, reinforcement will be delivered at a high rate which in turn will generate a momentum of compliant responding. This momentum should result in increased compliance when challenged in some way, for instance by a request with a low-probability of compliance (i.e., a low-*p* request). Compliance with the low-*p* request is therefore a result of the momentum generated by reinforcing compliance with high-*p* requests.

The momentum of compliant behaviour is established by asking the participant to complete four or five high-*p* requests which they have a previous history of reliably completing e.g., "Nigel, please give me a hug". Compliant behaviour was always verbally rewarded with a descriptive phrase e.g., "thank you for giving me a hug, that was nice" after the request was completed. Following the sequence of high-*p* requests, a request is then made to complete a task with which the subject does not normally comply with (a low-*p* request), e.g., "Nigel please clear your place at the table". As a result of delivering the high-*p* sequence, compliance with the low-*p* request should increase. So in this way the procedure is very similar to that described by Englemann and Colvin (1983).

A logical further step that Mace failed to mentioned in his account is that once a low-*p* request has been complied with and appropriately reinforced, then its frequency should increase as a result of this reinforcement. Compliance with the low-*p* request may then continue to increase as a result of the contingency between compliance with the low-*p* request and the reinforcer. Obviously, this situation would mean that eventually the low-*p* request would no longer have a low probability of compliance. Alternatively, if compliance to the low-*p* request fails to occur, then it should continue to do so as it will remain unreinforced.

The development of the new procedure was seen by Mace et al. (1988) as having several clear benefits over other existing treatments for noncompliant behaviour, such as those which involve physical contact with the client, especially when they are uncooperative and or aggressive. Alternatively, the use of differential reinforcement techniques which have been used to treat noncompliance depend upon an alternative reinforcer that is more powerful than the one which maintains the behaviour, and such reinforcers may be difficult to find. Furthermore, Mace et al. emphasised that several studies have found that increasing compliance also has the benefit of decreasing aggression, disruption, self-injury and tantrums (e.g., Russo, Cataldo & Cushing, 1981; Parrish, Cataldo, Kolko, Neef & Engel, 1986). Reduced noncompliance also has the benefit of increasing appropriate behaviour overall (Mace et al., 1988). The intervention that Mace et al. (1988) proposed therefore has clear advantages if it can increase compliant behaviour, especially if it does so without the need for direct physical contact which may evoke physical resistance or violence (such as with guided compliance procedures), and without the need to provide alternative reinforcement.

Mace et al. (1988) conducted a series of five experiments which examined various aspects of the high-*p* procedure. The participants in these experiments were men with a developmental disability who resided in a group home. One of these men was of very large stature and was prone to becoming aggressive when asked to perform household and personal hygiene tasks. Others were generally noncompliant or slow to respond to tasks.

The series of experiments Mace et al. conducted used the high-*p* procedure to test several hypotheses. The first experiment used the high-*p* sequence to reduce noncompliant behaviour in the large aggressive participants with 'do' (e.g., "put your lunch box away") and 'don't' (e.g., "don't put your feet on the coffee table") requests. Experiment two was designed to control for the effects of increased social attention to account for increases in compliant responding. This was done by issuing neutral social comments to the person before presenting a low-*p* request. Experiment three was the same as experiment one, except it varied the inter-prompt times between presenting the last high-*p* request and the low-*p* request. Experiment four examined the effect of the high-*p* sequence on reducing the time it took for two participants to start to perform simple household tasks. Attention control statements were also presented in the experiment. The last experiment was

designed to reduce the time it took for a participant to take a shower by reducing his off-task behaviour. This experiment compared the effects of high-*p* sequence, a contingency management procedure which consisted of reinforcement (cakes, money, etc) for completing showering tasks within specific time criteria, and a prompting procedure combining verbal and gestural prompts to return to the required task when off-task behaviour occurred.

Results from this series of experiments were very impressive. In experiment one, substantial increases in compliance above baseline were found with both the low-*p* 'do' and 'don't' requests. Experiment two demonstrated that the high-*p* sequence decreased noncompliant behaviour compared to baseline, and showed also that increased attention was not by itself sufficient to increase compliant behaviour. Experiment three showed that compliance decreased when the inter-prompt time between the high-*p* and low-*p* request increased. Over a series of reversals the 5 second inter-prompt time produced consistently higher levels of compliance than the 20 second inter-prompt interval.

Experiment four demonstrated that the high-*p* sequence can effectively reduce noncompliance by decreasing off-task behaviour. This was shown by comparing the results from the high-*p* sequence with the attention control statements (e.g., "that's a nice shirt your wearing") and no high-*p* sequence measures. When the attention control statements results were compared with the 'no high-*p*' results it was shown that both produced comparable increases in off-task behaviour and response latency. In the final experiment the efficacy of the high-*p* sequence over the prompting and contingency management procedures to reduce the time to take a shower and reduce off-task behaviour was demonstrated. All three techniques resulted in decreases in task duration, with the prompting technique being more effective than the contingency management procedure.

Taken together the results from Mace et al.'s (1988) experiments are impressive in that they demonstrate the ability of the high-*p* sequence to reduce noncompliance and decrease off-task behaviour and task duration. In addition, Mace et al.'s results seem to provide some evidence for the behavioural momentum theory on which their procedure was based. Mace et al. discuss some possible alternative accounts for the success of the procedure, for instance the results could be attributed to the effects of stimulus generalisation or

generalised imitation. However, Mace and his colleagues favoured the behavioural momentum hypothesis. It must be remembered, however, that these studies involved only a very small number of between-person replications, and did little to establish the generality and replicability of the intervention. These are points that Mace et al. acknowledged and hoped would stimulate further research into the procedure. This did occur, their experiments created a great deal of interest in the procedure, and as a result other researchers sought to replicate, extend and generalise the procedure.

2.3 The Use of High-p to Reduce Noncompliance and Other Behaviour Problems.

After the initial success of Mace et al. (1988) and Singer et al. (1987) many studies have been conducted to explore the generality of the high-*p* procedure, the first of which was by Mace and Belfiore (1990). They attempted to decrease a woman's stereotypic touching behaviour which interfered with her performance on low-probability household tasks. Functional analysis performed prior to the high-*p* intervention suggested that the stereotypic touching responses were maintained by positive reinforcement in the form of social disapproval or were being negatively reinforced by escape from task demands.

By using a high-*p* sequence Mace and Belfiore (1990) were able to produce increased compliance with household task requests and decrease stereotypic touching. When neutral statements were directed toward her no appreciable decrease in the rate of stereotypic touching occurred. The increases in compliant responding were attributed to behavioural momentum, and the collateral decreases in stereotypic responses as a possible result of functionally incompatible behaviours. This study opened up the possibilities of the high-*p* procedure as it demonstrated that other behaviour problems could be treated alongside noncompliance. This finding agrees with that of Parrish et al. (1986), who demonstrated collateral reductions in other behaviour problems when noncompliance was directly treated.

Horner et al. (1991) conducted a similar experiment to that of Mace and Belfiore (1990) when they examined the use of interspersed high-probability requests to increase student's attempts to complete hard (low-probability) tasks and to reduce aggression and self-injury that were associated with escape from those task demands. The 'interspersed request' technique which Horner et al. utilised is a combination of those used by Singer et al. (1987)

and Mace et al. (1988). Using three to five high-*p* requests preceding a hard task, Horner et al. reduced aggression and self-injury and increased student's attempts at the hard tasks. These findings were generalised to new trainers who had not previously worked with the students and also to new tasks that were presented to the students. The generalisation findings are not surprising however as the authors state that in a two month intervening period between phases, the high-*p* procedure was used intermittently with a variety of trainers and tasks.

Taken together the findings of the Mace and Belfiore (1990) and Horner et al. (1991) studies provide good supportive evidence for the efficacy of the high-*p* procedure to reduce noncompliance and in doing so produce collateral reductions in other behaviour problems[4]. These collateral benefits are beneficial as they reduce the need to treat these as separate behaviour problems, and as a result avoids the need for more intrusive interventions. Even at this early point in the development of the high-*p* procedure the worth of the intervention as a non-aversive and non-intrusive means of reducing problematic noncompliance, and correspondingly correcting other associated behaviour problems was becoming apparent.

So far all of the studies published have demonstrated the usefulness of the high-*p* procedure in decreasing problematic noncompliant behaviour and collaterally decreasing other behaviour problems which are present at the same time. A study by Zarcone et al. (1993) changed that by documenting the first occurrence where the high-*p* procedure failed to produce successful results.

Zarcone et al. (1993) suggested that a possible reason Mace and Belfiore's (1990) study had successfully decreased stereotypic touching behaviour was because these responses no longer resulted in escape when the high-*p* sequence was implemented. It was therefore possible that extinction may be partially responsible for Mace and Belfiore's success. Zarcone et al. conducted a study using a multiple treatment reversal design where the high-*p* sequence was presented with and without extinction of self-injurious escape behaviour and then extinction was presented alone. The results of the study demonstrated that the high-*p*

[4] Surprisingly, Horner et al. do not make mention of Mace and Belfiore's study despite it's similarity. One can only presume that did not have access to the unpublished manuscript when the study was submitted.

sequence alone failed to produce significant increases in compliance with the low-*p* requests presented. When combined with escape, compliance increased and the latency to SIB decreased, although this data lacked good stability. Similar results were achieved when extinction was presented alone. Zarcone et al. therefore concluded that reinforcement for compliance alone was not sufficient to decrease SIB which occurred as an escape response. They suggested extinction of escape responding may be necessary for the high-*p* sequence to 'compete' with the negatively reinforced escape behaviour.

Put this way it appears that Zarcone et al. (1993) consider that the high-*p* sequence may be successful due to the effects of differential reinforcement, although they do not expand upon this point. Nor do they consider other possibilities for the failure of the high-*p* sequence to produce a treatment result. One possibility may be that the SIB did not serve as an escape response but may have had an alternative communicative function (Carr & Durand, 1985) which was not being adequately addressed by either extinction or by the high-*p* sequence. This may account for the variability demonstrated in Zarcone et al.'s results.

Zarcone et al. (1994) extended their earlier study (Zarcone et al., 1993) to further investigate the use of the high-*p* procedure with and without the use of extinction procedures to treat SIB. In this study two subjects were used and a more complete analysis was performed (Zarcone et al., 1994). Prior to the study being undertaken a functional analysis was conducted to ascertain that the SIB was being maintained through escape from task demands. Using a reversal design the effects of the high-*p* procedure alone in reducing SIB and increasing compliance with low-*p* requests were compared with high-*p* combined with extinction procedures.

Results from this study were similar to those of Zarcone et al. (1993) demonstrating that the high-*p* request sequence was not effective in reducing SIB. In fact SIB was found to increase and compliance decrease with one subject when the high-*p* sequence was presented alone. When extinction was combined with the high-*p* sequence, rates of SIB were found to decrease in both subjects, and rates of compliance increased with one subject. Rates of compliance with the low-*p* requests remained at near zero for one subject.

Combined the two studies conducted by Zarcone and her colleagues limit the high-*p* procedure with regard to the extent or degree of severity of behaviour problems it can be successfully used to treat. In these studies high-*p* alone was shown to be ineffective in reducing self-injurious behaviours maintained by escape from aversive tasks. When the high-*p* sequence was combined with extinction procedures the self-injurious behaviours were no longer effective in avoiding the task demands and SIB decreased and rates of compliance increased. Zarcone et al. (1994) suggest that additional procedures (such as extinction) may be necessary when noncompliance covaries with another competing behaviour, such as SIB maintained by escape.

2.4 Continuing the Development of the High-p Procedure.

After the initial success of Singer et al. (1987) and Mace et al. (1988) with the high-*p* procedure, Harchik and Putzier (1990) adapted and expanded the use of the procedure to increase compliance with taking prescribed medication. Previously, the woman who participated in the study vomited or spat out the medication prescribed to her to help control seizures. She began to reliably take her medication when asked, if the request was preceded by a sequence of high-*p* requests. In addition to verbal reinforcement being given for instances of compliant behaviour, compliance was also positively reinforced by giving tokens which could be exchanged for items or activities she desired. When an inadvertent return to baseline conditions occurred, her compliance decreased and her spitting out or vomiting of the medication again increased. Compliance increased and spitting out or vomiting decreased with a return of the high-*p* condition. This high level of compliance remained at six month follow-up.

Harchik and Putzier (1990) successfully decreased the frequency of spitting out and vomiting and expanded the utility of the high-*p* procedure. However maintenance of the gains were not demonstrated when the sequence was removed in a return-to-baseline condition. It may have been beneficial to the study if a further attempt had been made to again remove the sequence once it had been in place for a greater length of time, perhaps using a fading sequence. These additions would have greatly enhanced the study, and possibly reduced the time required to have the participant comply with taking her medication. This aside, these shortcomings may perhaps be excused given that the high-*p*

procedure and knowledge surrounding its limitations were very much still in their infancy at that time.

Although the high-*p* had been demonstrated to be successful, the majority of these studies found that a return to baseline levels of compliance occurred when the high-*p* sequence was withdrawn. Acknowledging this, Ducharme and Worling (1994) conducted a study which intended to explore the use of a stimulus fading sequence to systematically reduce the high-*p* sequence without reducing the gains in compliant behaviour that had been achieved. Also, they sought to further expand the use of the high-*p* procedure by having the parents of the children participating in the study conduct the high-*p* procedures in the family home.

Ducharme and Worling (1994) firstly had the parents involved in the study select low and high-*p* requests they would like to use in the study using a compliance questionnaire. Compliance with these requests was then monitored to select a final pool of five high-*p* requests with a percentage compliance value of 80% or greater and a pool of five low-*p* 'do' and five low-*p* 'don't' requests with percentage compliance values of 40% or less. Once baseline and high-*p* sequence phases had been conducted the fading sequence was introduced which systematically removed the high-*p* sequence. One child failed, however, to demonstrate gains in compliance with the low-*p* 'don't' requests when the high-*p* request sequence was implemented. This problem was corrected when these requests were replaced by symmetrical 'do' requests. Follow-up probes were conducted for up to 16 weeks to monitor the effectiveness of the fading sequence.

Ducharme and Worling (1994) produced highly impressive results which, through the use of the fading sequence, resulted in the maintenance of very high levels of compliance at 16 weeks follow-up. Their results are, therefore, highly important to the development of the high-*p* procedure. Previous studies have found that gains in compliance were lost when the high-*p* sequence was removed. Not only did Ducharme and Worling effectively increase compliance with low-*p* requests, their use of a fading sequence ensured the maintenance of these gains. Furthermore, the use of the high-*p* procedure was further expanded into the

home environment creating what might be a possible tool for improving compliance in the home[5].

Carrying on the development of the high-*p* procedure into other areas, a study by Ellison (1997) incorporated the high-*p* sequence as part of an ongoing compliance training programme. The high-*p* sequence was used as part of a vocational training programme and involved asking the participant to perform several high-probability workshop tasks before being asked to perform a new (low-*p*) task. Using the high-probability tasks in this way increased the person's productivity. The overall compliance training package helped to increase social skills and resulted in a decrease in noncompliance, SIB and aggression. As these other behaviour problems decreased, so to did medication administered to assist in their control.

In another area McComas et al. (1998) explored the use of the high-*p* sequence to increase a toddler's compliance with requests to remain still while his mother conducted a daily medical procedure to change and clean a central venous line (c-line). The child frequently kicked or turned away, or pulled out or touched the sterile site when it was being cleaned and changed. In this study a sequence of high-*p* requests was compared to and combined with differential reinforcement of alternative behaviour (DRA) and escape extinction (ESC EXT) techniques during a series of steps to complete the cleaning/changing procedure. The DRA technique employed was playing with the child for 5 seconds and the ESC EXT procedure involved physically holding the child still while the step in the procedure was completed. The high-*p* sequence consisted of the toddler's mother delivering a series of high-*p* requests prior to the delivery of the low-*p* request to hold still. Compliance with the 'hold still' request during the High-*p* + DRA/ESC EXT condition was consistently higher than when the DRA/ESC EXT condition was in effect. This study has once again demonstrated the utility of the high-*p* procedure and its ability to be implemented in a number of quite varied areas.

[5] It is these two points which are central to the study performed as part of this thesis. They suggest a possible avenue for developing what has already been shown to be an effective procedure to treat problematic noncompliance into an effective home-based intervention. This idea will be expanded at the end of this review.

A recent study by Smith and Lerman (1999) has further extended the utility of the high-*p* procedure by comparing its use with a guided compliance procedure in a family home. In this study the mothers of the two participating boys (one diagnosed with autism and moderate mental retardation, the other with pervasive developmental disorder not otherwise specified and mild mental retardation) were taught to administer both a high-*p* request sequence and a three step guided compliance procedure (a gestural prompt through to physically guiding the child). The individual procedures were each assigned to a set of low-*p* requests. Percentage compliance for each set of low-*p* requests was first measured in a baseline phase and then compared for each participant using a multi-element design where either the guided compliance procedure or the high-*p* sequence was administered on alternate days in the treatment comparison phase. Following the treatment comparison phase, the guided compliance procedure was then used with both sets of low-*p* requests to compare compliance following a switch in procedures. In addition to percentage compliance the researchers also assessed how well the mothers implemented both of the two procedures, as well as satisfaction with the procedure.

Results from the study showed that both procedures produced an increase in percentage compliance with the low-*p* requests used. The findings also suggest that the guided compliance procedure produced higher levels of compliance with that particular set of low-*p* requests relative to the high-*p* sequence. However the data were very unstable for one boy. When the interventions were switched following the treatment comparison condition, compliance with both sets of low-*p* requests was similar as would be expected.

What is unclear from these results, however, is if the full three stages of the guided compliance procedure were used during these sessions. If they were then this would artificially inflate the compliance values obtained, as the third stage of the guided compliance procedure involved the parent physically guiding their child through the low-*p* request. This would result in compliance with these requests as defined by the study, and hence higher percentage compliance for this procedure. If this is the case then a true comparison with the high-*p* sequence cannot be made. Furthermore, as Smith and Lerman (1999) point out it is unclear what effect alternating the two procedures on a daily basis has on the percentage compliance obtained with each procedure. They would have been better to have employed an alternating-treatment type design to make this comparison.

This aside, the additional measures of correct treatment intervention showed that both parents could implement the two procedures correctly and consistently. Both parents also reported equal satisfaction with the procedures and also found them easy to implement. So, despite the shortcomings mentioned above, this study demonstrates that the high-*p* procedure was still effective with these participants, and that the parents could effectively be taught to implement both the high-*p* and a guided compliance procedure with brief in home training. Both parents were also satisfied with the two procedures. These findings are important to consider when offering treatment alternatives such as the high-*p* procedure to manage noncompliance in the home setting.

2.5 The Use of High-p in an Educational Setting.

The use of the high-*p* procedure within an educational setting has already been discussed in reviewing Singer et al. (1987). However numerous other studies have been conducted by Davis and her colleagues which have greatly expanded the utility of the high-*p* procedure within this setting.

Development of the high-*p* technique occurred when Davis et al. (1992) combined the procedure with generalisation strategies (the use of multiple trainers) to increase the rate of responding to low-probability requests in children with severe disabilities. The participants in the study had a history of severe noncompliance and aggression which seriously affected their opportunities to learn at school. Using a high-probability request sequence Davis et al. were able to increase the rate of responses to low-*p* requests. By using multiple trainers, these responses were generalised to new trainers who did not implement the high-*p* sequence. Once the high-*p* sequence was discontinued, responses continued to be displayed on all occasions when weekly probe trials were conducted for four weeks.

Building on their earlier success Davis et al. (1994) sought to use the high-*p* sequence to increase the social interactions of three children with severe disabilities who were socially withdrawn. To do this they used 'training peers' to interact with the children when low-probability requests to engage in social interactions were presented during baseline and high-*p* treatment sessions. Generalisation sessions conducted in a new setting then followed where new 'generalisation peers' were used and the same low-*p* social interaction requests

were presented (without the high-*p* sequence). Davis et al.'s (1994) results showed that social interactions and initiations increased when the high-*p* request sequence was used prior to the presentation of low-*p* social interaction requests. In generalisation sessions, unprompted social interactions with non 'training peers' were found to occur. These interactions were maintained at six weeks follow-up.

These studies (Davis et al., 1994; Davis et al., 1992) expanded the utility of the high-*p* sequence by demonstrating that the procedure is not restricted to the treatment of compliance and behavioural problems in institutional and home settings, but can also be very effective from an educational and social perspective. By aiding transition from one task to another (Singer et al., 1987), increasing social interactions (Davis et al., 1994), and by increasing attempts to perform tasks and decrease aggressive behavior (Davis et al., 1992) the high-*p* request sequence has been shown to be an effective strategy in the classroom to overcome social skill deficits and increase learning opportunities. In this respect the high-*p* procedure has become more than a tool to deal with problematic noncompliant behaviour; it has become an effective method which can also be used to increase the learning opportunities of children who experience a developmental disability both educationally and socially. Davis and Brady (1993) recognise and focus on these points when they discuss possible future directions of the high-*p* procedure in their review.

Continuing along the lines of Davis et al.'s (1994) research a further study by Sanchez-Fort et al. (1995) explored the use of the high-*p* procedure incorporated into a classroom routine to increase the use of sign language and speech in two young girls with severe disabilities. The high-*p* request sequence was used prior to asking the subjects to sign or speak a low-probability target word. An assessment was also made of any generalisation to additional low-*p* words that had not been paired with the high-*p* sequence. Results from the study show that both girls performance on the low-*p* target words increased when preceded by the high-*p* sequence. One also demonstrated generalisation to other low-*p* non-training words.

Sanchez-Fort et al.'s (1995) study confirmed the efficacy of the high-*p* procedure for increasing the occurrence of a low-probability behaviour. In this study the low-*p* behaviours of interest were the signing or speaking of low-*p* words, which differs somewhat from other studies which have used the high-*p* sequence to increase compliance with tasks

such as self-care or household chores. By combining the high-*p* procedure into the usual classroom routine the technique has been adapted from a technology of behaviour change into a useful teaching strategy. As Sanchez-Fort et al. point out, numerous procedures and tactics already exist to teach new behaviours such as signing or social interactions (as in the case of Davis et al., 1994). However, when combined with the high-*p* procedure these strategies become even more effective which further expands the worth and utility of the high-*p* procedure in a variety of settings.

Davis et al. (1998) further expanded our knowledge of the use of the high-*p* sequence. This study aimed to increase the conversational and social interactions of two teenagers who communicated using electronic communication aids. The two teenagers were found to rarely engage in social communication exchanges other than when they were asked direct questions which required an obligatory answer. By embedding a series of these high-probability obligatory interactions in a communication exchange it was found that non-obligatory conversational utterances substantially increased. When the series of obligatory high-*p* questions were withdrawn, one participant maintained non-obligatory interactions, and also generalised these interaction to another communication partner who had not issued the high-*p* questions.

Along a different line the use of the high-*p* procedure within the educational setting was further advanced with a study by Davis and Reichle (1996). This examined the use of variant versus invariant high-*p* requests to increase social bids in children with severe emotional behavioural disorders (not specified). It also examined whether the young peers of the children involved in the study could be taught successfully to use the procedure. Results demonstrated that the use of a variant set of high-*p* requests was more effective than an invariant set of high-*p* requests in producing social interactions with the children's peers. When the invariant set of high-*p* requests was used, initially high levels of correct responses to requests slowly decreased to baseline levels of interaction.

Davis and Reichle (1996) advanced our knowledge and understanding of the high-*p* procedure on several fronts. Firstly, they again demonstrated that the procedure can successfully be used in an educational setting to increase social interactions with peers. More importantly though, it expanded the success of the procedure to another group of

individuals, namely those with emotional behavioural disorders. Furthermore it showed that the participants' peers could successfully implement the procedures to increase social interactions, which would presumably become mutually reinforcing for both parties. Finally, the study demonstrated that more substantial treatment gains were found when the set of high-*p* requests used in the sequence varied and was not fixed.

Davis and Riechle's study not only expanded the utility of the high-*p* procedure, it also highlighted some very important procedural aspects in regard to optimising possible treatment gains. It also opened up a variety of possibilities as to with whom the procedure could be used and in what settings.

Killu et al. (1998) conducted a study within an educational setting which examined the use of the high-*p* procedure as a 'naturalistic intervention strategy'. This term denotes the use of the high-*p* procedure embedded in the everyday teaching strategies used within the classroom. In this way their study is similar to that of Sanchez-Fort et al. (1995). Training sessions were arranged as part of the usual morning activities for each child involved in the study. Low-*p* tasks were selected from several learning activities i.e., reading books, fine motor activities, etc, with which the children had displayed inappropriate or unsuccessful responding. A high-probability request sequence was used prior to the presentation of the low-*p* requests. Results from the study showed very favourable increases in compliant behaviour and decreases in disruptive behaviour when the high-*p* sequence was used. During a maintenance phase when the high-*p* requests were withdrawn these results remained at the same high level. The gains in compliance and decreases in disruptive behaviour were maintained at 6 weeks follow-up. Compliance with low-*p* requests was also found to generalise to another trainer who had not used the high-*p* sequence.

The Killu et al. (1998) study was successful in reducing noncompliance with low-*p* requests, once again reconfirming the utility of the high-*p* procedure. They also were successful in merging the procedure into the everyday running of the classroom teaching programme. Furthermore they were successful in maintaining the decreases in noncompliance and disruptive behaviour when the high-*p* sequence was removed.

Killu et al.'s study has, like many others reviewed, further expanded the areas in which the high-*p* procedure can be utilised as an effective intervention. It has also highlighted some major possibilities for advancing the technique into everyday teaching strategies used within the classroom. The idea of using the high-*p* sequence as a naturalistic intervention strategy is not however limited to the classroom. This same idea could be used within numerous locales including the home where it could be used to help parents manage behaviour problems. That aside, Killu et al.'s study has reconfirmed that the high-*p* procedure is non-intrusive, nonaversive, effective and very importantly, relatively simple to use.

More recently however, Ardoin et al. (1999) conducted a study which explored the use of the high-*p* procedure to increase compliance and decrease compliance latency to teacher requests to change from one activity to another. This study differs from previous ones in that the high-*p* sequence was administered in a group format to an entire regular (i.e. non-developmentally disabled) second grade (Year 2) class, while compliance and latency was measured in three target children. Ardoin et al. also employed a fading strategy similar to Ducharme and Worling (1994) where the high-*p* requests were reduced from three to two to one in an attempt to transfer stimulus control of compliance from the high-*p* to the low-*p* requests. Results from the study demonstrated that the group administered high-*p* requests increased compliance and decreased response latency in two of the three target children. These improvements were maintained throughout the fading sequence and at two and three week follow-up. This study therefore tentatively suggests that the high-*p* sequence may well be useful within regular as well as special needs classrooms to assist children in transferring from one activity to another.

2.6 Procedural and Theoretical Aspects of the High-p Procedure.

The utility and range of appliaction of the high-*p* procedure continues to be demonstrated by studies such as those by Davis and her colleagues and by Ducharme and Worling (1994). Of those studies reviewed only Zarcone et al. (1993) has placed limitations on the high-*p* procedure when it failed to decrease SIB unless combined with extinction procedures. The study by Davis and Reichle has suggested that the use of variant high-*p* sequences may result in greater increases in compliance with low-*p* requests.

Certain procedural aspects of the high-*p* sequence were also tested when Houlihan, Jacobson and Brandon (1994) replicated Mace et al.'s (1988) third experiment, varying the inter-prompt times between the presentation of the high-*p* sequence and the low-*p* request. Houlihan et al. confirmed that the 5 second inter-prompt interval was more effective than the 20 second inter-prompt time in increasing compliance with the low-*p* requests. This finding suggests that close temporal contiguity is necessary between the high-*p* and the low-*p* requests to produce optimal increases in compliance.

Further limitations were imposed on the high-*p* procedure when Rortvedt and Miltenberger (1994) conducted a study which compared the use of the high-*p* request sequence with time-out procedures to decrease noncompliance in regular (or developmentally typical) children. This study like Ducharme and Worling (1994) and Smith and Lerman (1999) was conducted in the family home using the mothers of the two children as the intervention agents. Using a multiple-baseline, alternating-treatments design, Rortvedt and Miltenberger compared the effect on compliance of both a high-*p* sequence of requests and exclusionary time-out (1 minute duration, with a 10 second quiet criteria for return) as a consequence for noncompliance. Results indicate that when the high-*p* sequence was used compliance with the low-*p* requests was variable in one child and more stable with the other but with a decreasing trend. In comparison, time-out results were more consistent in maintaining compliance at high rates with both children.

The results of Rortvedt and Miltenberger's (1994) study may have placed limitations on the developmental groups with whom the procedure is effective. These preliminary findings indicate that the procedure used within the home environment may not be effective with developmentally typical children. However, this in itself is not a major concern for the high-*p* procedure as strategies like time-out exist to effectively control noncompliant behaviour in these children.

Although not discussed within Rortvedt and Miltenberger's (1994) study their findings are damaging to Mace's momentum account of the procedure. On a theoretical level Mace's momentum theory does not adequately account for why the high-*p* procedure failed to increase compliance, despite the fact that compliance with the high-*p* requests occurred. The momentum theory suggests that if compliance with high-*p* requests occurred, then it is

assumed that a momentum of compliance was generated, which should continue when the low-*p* request was issued. This did occur to some degree in Rortvedt and Miltenberger's (1994) findings but was not consistently demonstrated and therefore does not reliably fit with the theory. Instead of accounting for their findings within the momentum metaphor Rortvedt and Miltenberger suggest the function of the noncompliant behaviour is not being addressed when the high-*p* procedure is being used. This is of course highly possible if noncompliance is being maintained by contingent attention as Rortvedt and Miltenberger suggest. In this situation time-out as a consequence for noncompliance may be a more effective treatment for regular children than an antecedent intervention such the high-*p* procedure. This may be because time-out is punishing the child and does not provide the child with reinforcement previously gained from being noncompliant. This may be more salient to the child than whatever action the high-*p* procedure invokes to increase compliance in other developmental groups.

Naturally there were many variables which could not be controlled for in Rortvedt and Miltenberger (1994) which may have drastically effected the outcome. These included the previous history of how requests were made, whether descriptive praise for compliance had been used in the past, or how consistent the caregivers of the subjects had been with consequences for misbehaviour. All of these factors have been shown to influence compliant behaviour in children (e.g., Forehand & McMahon, 1981; Sanders & Dadds, 1993) and were incorporated into Rortvedt and Miltenberger's study.

As Rortvedt and Miltenberger (1994) point out, their study highlights a need to understand the conditions under which the high-*p* procedure is most effective. This point could be taken further, to again stress the importance of having an adequate theory to account for the action at work when the high-*p* procedure is used. An adequate theory needs to be able to account for treatment failures such as those of Rortvedt and Miltenberger (1994), Zarcone et al. (1994), and Zarcone et al. (1993).

Mace's momentum theory of the high-*p* procedure is further questioned when the findings of a study by Kennedy et al. (1995) are examined. Kennedy et al. examined the high-*p* request sequence and another antecedent intervention, described by Carr, Newsom and Binkoff (1976). Carr et al. directed a series of unrelated non-reinforced social comments (e.g., "It's

a beautiful day") towards their participants which resulted in increased rates of compliance. Kennedy et al. alternated the high-*p* sequence with social comments to compare the effect each had on compliance. Their findings indicate that the high-*p* procedure was only marginally more effective than social comments on increasing compliance. As a result Kennedy et al. questioned whether the two procedures have the same effect on compliance, or if they are they different. Furthermore, they questioned whether positive reinforcement is necessary to increase compliance in the high-*p* procedure. Again these findings are of concern to Mace's momentum analogy, as compliance with a low-*p* request should not occur unless a momentum of compliance is generated by preceding it with a series of reinforced high-probability requests.

It has not gone unnoticed that problems exist with Mace's momentum account of the high-*p* procedure. Even very early on Mace et al. (1988) recognised that the fit between Nevin's momentum analogy and the high-*p* request sequence was far from good, allowing alternative accounts to be proposed. Given that alternative explanations are possible, then Mace's momentum account must come under detailed scrutiny and evaluation for it to be considered a reliable and valid theory.

This scrutiny occurred in the course of considerable debate between Nevin (1996) and Mace (1996) and others such as Houlihan and Brandon (1996) and Plaud and Gaither (1996). After some discussion Mace (1996) finally conceded that the procedural differences between the high-*p* procedure and Nevin's behavioural momentum metaphor were too great for both to be invoking the same phenomena. Mace (1996) concluded that they had been premature in the parallels they drew, leaving the high-*p* procedure without any substantive empirically tested theory to account for why the procedure is successful.

The important point that can be taken from this debate is that Mace and his colleagues acknowledged that the Nevin's behavioural momentum metaphor provided them with the inspiration and impetus for the high-*p* procedure, a point which Nevin (1996) commends. Houlihan and Brandon (1996, p.553) take this point a step further when they conveniently summarise the debates outcome by stating that "Mace's development of the high-*p* procedure is innovative enough to stand alone outside the umbrella of behavioural momentum". This provides Mace's procedure with a great deal of kudos, as Nevin's work

on behavioural momentum metaphor can be seen as a highly significant development in the field of experimental behaviour analysis.

Despite the fact that a similar technique was presented by Englemann and Colvin (1983) it was Mace et al. (1988) who set the scene for the later work which was to come on the high-*p* procedure. One must remember that the high-*p* technique was and still is a unique form of antecedent intervention with the capability of producing substantial reductions in noncompliance. Furthermore, the fact that at present no theory has emerged to firmly take behavioural momentum's place in any account of the high-*p* procedure by no means diminishes the reality that the technique is still highly effective in producing increases in compliant behaviour. This provides the opportunity for other explanations to be presented.

Kennedy et al.'s (1995) and Carr et al.'s (1974) results may possibly support an alternative hypothesis for the high-*p* procedure that is presented by Meyer and Evans (1989). Meyer and Evans discuss the use of 'mood induction' as a nonaversive strategy which may influence how a persons reacts to a low-*p* request. By using a 'warm-up' procedure involving positive conversation or pre-task requesting to produce a positive mood, Meyer and Evans suggest that compliance with low-probability requests may be greatly increased. This theory has intrinsic value and may well be a possible alternative to the momentum analogy as all of the high-*p* studies reviewed could also be interpreted in this way.

If one considers that commonly used high-*p* requests are those which are close and interpersonal and ones which the individual finds pleasurable, then Meyer and Evans' (1989) hypothesis may well be correct. A possible way of testing this proposal would be to compare compliance gains between two sets of high-*p* requests, one set which are seen to be 'enjoyable' and induce a positive mood, and another that does not induce a positive mood but still nonetheless has a high degree of compliance. More substantial compliance gains in the positive mood set would provide support for Meyer and Evans' theory.

Even though Mace (1996) retracted the momentum analogy from the high-*p* procedure, Mace continued to discuss ways of improving the procedure from within Nevin et al.'s theoretical framework on behavioural momentum. After examining the treatment failures of Rortvedt and Miltenberger (1994), Zarcone et al. (1993), and Zarcone et al. (1994), Mace

et al. (1997) considered that one possibility for increasing the effectiveness of the high-*p* procedure would be to increase the salience of the positive reinforcement for compliance. As noted earlier in this review the studies of Zarcone et al. (1993) and Zarcone et al. (1994) demonstrated that the high-*p* sequence alone was not successful in increasing compliance and reducing SIB unless it was paired with extinction procedures. Zarcone et al. (1994) suggested that a possible reason the high-*p* sequence failed to produce successful results was that it was competing with another 'stronger' behaviour and the positive reinforcement gained for compliance was not great enough to compete with the task avoidance that came from escape. In line with this suggestion Mace et al. (1997) examined compliance with low-*p* requests while varying reinforcer quality.

Mace et al. (1997) ran three experiments to examine the effects of reinforcer quality on compliance. Two of these were conducted within an applied setting, while the last was a basic laboratory experiment which aimed to further isolate the relationship between reinforcer quality and resistance to change. In the first two experiments the consequences of compliance were varied between descriptive praise, a food reward and both food plus praise. Results from these experiments showed that both food and praise increased compliance, however food proved to be a more powerful reinforcer in most instances, with food plus praise producing similar results. In experiment three, the rat subjects showed greater resistance to change (analogous to mass in the momentum metaphor) to the reinforcer for which they demonstrated a greater preference.

This study by Mace et al. (1997) therefore has suggested possible ways of increasing the effects of the high-*p* sequence. By using a more preferred reinforcer greater increases in compliance may result which could be beneficial when the high-*p* procedure is being used to treat severe behaviour problems such as SIB as in the case of Zarcone et al. (1994). The use of food as a positive reinforcer for compliance may be problematic however, especially if it is given after every instance of compliance. What need to be examined are ways of reducing the reinforcement rate without reducing levels of compliance, such as through the use of a fading strategy (e.g., Ducharme and Worling, 1994), or alternatively by introducing a lean variable or random ratio schedule of reinforcement. A third alternative may be pairing the initial preferred reinforcer with a second stimulus (for instance praise, a powerful reinforcer in itself) creating a conditioned reinforcer which has the same salience as the

initial preferred reinforcer. This would solve problems such as weight gain that may result from the use of food as a preferred reinforcer.

2.7 Summary.

The studies covered in this review demonstrate that considerable research has explored the use and generality of the high-*p* and other generic procedures. Early studies conducted by Singer et al. (1987) and Mace et al. (1988) set the scene and provided the basis on which future research was undertaken. These illustrated the ability of the intervention to increase compliance with various low-*p* requests and also reduced latency to task completion and off-task behaviour.

Subsequent research examined the use of the high-*p* sequence to reduce noncompliance and also produce collateral reductions in other associated behaviour disorders (Mace & Befiore, 1990; Horner et al., 1991). However not all of the attempts to reduce problematic behaviour associated with noncompliance were successful. Studies by Zarcone et al. (1994) and Zarcone et al. (1993) failed to produce reductions in noncompliance and SIB with the use of the high-*p* sequence alone. By combining the high-*p* procedure with extinction procedures successful results were achieved.

Studies by Ducharme and Worling (1994) and Harchik and Putzier (1990) further expanded the utility of the high-*p* intervention. Ducharme and Worling explored the use of the high-*p* procedure in a home environment and also used a fading sequence to increase the maintenance of compliance gains that were achieved. Harchik and Putzier successfully used the high-*p* sequence to increase the probability of a patient taking her medication by decreasing the frequency of vomiting and spitting.

The simplicity of the procedure was demonstrated in a study by McComas et al. (1998) where the mother of a young toddler successfully implemented a high-*p* procedure to assist her in changing the child's c-line. This study was performed in hospital setting and demonstrated the generality and flexibility, as well as illustrating the procedure's applicability in a variety of wider environments.

Smith and Lerman (1999) trained parents to use both the high-*p* procedure and a guided compliance technique to compare increases in compliant behaviour between the two interventions. Both procedures managed to increase compliance with low-*p* requests, however, the guided compliance procedure was more successful. The parents involved in the study were able to adequately administer the two procedures, and also reported satisfaction with them. This finding suggests further promise for the high-*p* procedure as a home-based intervention.

Numerous studies by Davis and her colleagues expanded the utility of the high-*p* procedure for use within the classroom. These studies demonstrated that the procedure can be successfully used to increase the rate of responding to low-*p* requests (Davis et al., 1992), and also that the procedure can be successfully used to increase low-probability social interactions (Davis et al., 1994). With the use of generalisation procedures maintenance of these behaviours occurred. This work was continued by Killu et al. (1998) and Sanchez-Fort et al. (1995), incorporating the high-*p* procedure into the everyday classroom routine. A study by Davis and Reichle (1996) successfully demonstrated that the high-*p* procedure is also effective with children diagnosed as having emotional behavioural problems. This study also suggested that the high-*p* sequence was more effective when variant versus invariant requests were used.

Finally, the results of several studies have highlighted limitations on the high-*p* procedure. Houlihan et al. (1994) replicated an earlier study by Mace et al (1988), reconfirming that close temporal contiguity is required between the high-*p* sequence and low-*p* request to obtain successful results. A study by Rortvedt and Miltenberger (1994) suggested that the high-*p* sequence may not be effective in decreasing noncompliant behaviour in developmentally typical children. The results of Kennedy et al. (1995) suggested that the high-*p* procedure is only marginally more effective than non-reinforced social comments in increasing compliant behaviour. It is findings such as Kennedy et al.'s combined with Rortvedt and Miltenberger's and those of Zarcone and her colleagues which have questioned the theoretical basis of the behavioural momentum account of the high-*p* procedure.

2.8 Directions for Future Research.

In light of this review, it should become clear to the reader that many avenues of research still exist surrounding the high-*p* procedure. Each article has suggested several areas for further investigation and have highlighted many unanswered questions. These questions will serve to drive future research in the use, generality and limitations of the high-*p* procedure. For instance, research similar to that of Zarcone et al. (1993) and Zarcone et al. (1994) is required to further explore the use of the high-*p* procedure to treat behaviour problems which occur in conjunction with noncompliance.

The work of Davis and her colleagues using the high-*p* procedure to increase children's social interactions within an educational setting warrants replication and extension. Also, research expanding the work of Killu et al. (1998) and Sanchez-Fort et al. (1995) could be conducted to further explore techniques and limitations of embedding the high-*p* procedure into everyday classroom routines. There is also a great need for research exploring the theoretical basis of the high-*p* procedure. Finally, there is a need for research such as that conducted by Harchik and Putzier (1990) and McComas et al. (1998) to explore the generality and expand ways in which the high-*p* procedure can be used to treat a variety of different noncompliant or low-probability behaviours in a number of settings.

2.9 Present Study - Why Replicate Ducharme and Worling (1994)?

It has been demonstrated numerous times that the high-*p* intervention is successful in decreasing noncompliant behaviour in a variety of situations, however, maintenance of these treatment gains has not been demonstrated to the same extent. The stimulus fading procedure of Ducharme and Worling (1994) successfully removed the high-*p* sequence, without any significant loss of the gains in compliant responding achieved. Other studies examined (Davis et al., 1994; Davis et al., 1992; Davis et al., 1998) also demonstrated maintenance of gains in compliant responding after the high-*p* request sequence was withdrawn, however these studies used a generalisation procedure replicated over several studies[6]. Consequently, careful replication of Ducharme and Worling's stimulus fading

[6] Ardoin et al. (1999) also utilised a fading strategy based on Ducharme and Worling (1994) to successfully remove the high-*p* sequence, however Ardoin et al.'s study was published after this

component is important and necessary to assess whether this procedure can reliably produce maintenance of the compliant responding achieved.

Establishing the reliability of the stimulus fading procedure to produce long-term maintenance of treatment gains is beneficial for the development of the high-*p* procedure as a home-based treatment for noncompliance. Within the home environment it has been suggested that problematic noncompliance may result in unnecessary tension, pressure and family disharmony. This tension and pressure is to the detriment of all family members and has the potential to stress marital, sibling and parent-child relationships, possibly escalating to a point where violence and/or abuse occurs.

By reducing noncompliance through the use of the high-*p* procedure the possibility exists that these situations will be lessened. To ensure that these benefits are ongoing, it is necessary to ensure that maintenance of compliant behaviour occurs after the high-*p* sequence is withdrawn, such as through the use of Ducharme and Worling's (1994) stimulus fading procedure. This in turn may have long-term benefits as the child may then gain increased access to opportunities to learn valuable life and social skills, enabling them to become a more socially capable adult.

Within the home environment, Ducharme and Worling's (1994) stimulus fading procedure may also prove beneficial if it can successfully remove the high-*p* sequence within a time period suitable for this setting. If parents and caregivers are asked to perform a high-*p* sequence each time they make a low-*p* request, they are being asked to add to what is no-doubt an already increased workload, due to the very nature of their child's special needs. It remains to be seen just how long parents and caregivers are willing to perform even a quick and easy procedure everytime they make a low-probability request of their child before they lose interest or become frustrated with the intervention. It also remains to be seen how long a child will respond to the procedure before loss of interest, satiation, or loss of reinforcer efficacy occurs. If the high-*p* sequence can be successfully removed before either of these situations occur, then the stimulus fading procedure will be invaluable in ensuring the ongoing success of the high-*p* procedure as a home-based intervention.

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proposal was written, and the actual study was performed. To avoid reader confusion and what would seem an omission on the writers part, Ardoin et al.'s study will not be included in this section.

Throughout the proceeding literature review the simplicity of the high-*p* intervention has been demonstrated. Davis and Reichle (1996) demonstrated that children can effectively be taught to use the intervention with their peers, while Ducharme and Worling (1994) and Rortvedt and Miltenberger (1994) successfully demonstrated that parents can effectively manage the procedure for themselves[7]. It should be noted however that Ducharme and Worling's study was conducted with the second author present during all experimental sessions, guiding the parents in the use of the high-*p* sequence while using video equipment to record the parent-child exchanges. Because the high-*p* procedure and fading sequence are relatively straight forward in their application, it is possible that parents and caregivers might be able to implement the procedure for themselves, without direct guidance from a therapist or researcher.

This study proposes to extend Ducharme and Worling's (1994) work by developing a treatment manual which closely replicates the high-*p* procedure and fading sequence (as performed by Ducharme & Worling) which parents will work through by themselves, without the presence of a researcher. Each section of Ducharme and Worling's study will be presented in a workbook fashion that will guide parents through each stage of the intervention. By developing the procedure into a treatment manual, it will allow systematic replication of the procedures across numerous subjects, providing an opportunity to evaluate the reliability and effectiveness of the fading sequence. It will also provide an opportunity to assess whether parents can manage the intervention in a treatment manual / workbook format. This evaluation is necessary to assess potential future development of the procedure in this format.

Numerous benefits exist for both therapist and parent if the high-*p* and fading sequence procedures can be successfully developed into a treatment manual format. If parents and caregivers can successfully implement the high-*p* and fading sequence procedure in this fashion, then the need for close therapist or researcher contact may possibly be reduced. From a therapist perspective this is beneficial as it will allow better management of time and

[7] Smith & Lerman (1999) also successfully demonstrated that parents can effectively implement the high-*p* within the home environment, however (like Ardoin et al.,1999) this study was published after this proposal was written and the actual study was conducted, so will not be discussed in this section.

resources. From a parent perspective it will provide a cost effective alternative if financial resources are limited.

Replicating Ducharme and Worling's study will also assess whether the high-*p* procedure will successfully reduce noncompliant behaviour without the need to first perform a potentially costly and time consuming functional analysis (as was done in Ducharme and Worling's original study). If it appears that a functional analysis is not required then further support will be offered for the high-*p* procedure presented in a workbook format, as it may not require this assessment to adequately work in the home environment.

If it should happen that the high-*p* procedure does not successfully increase compliant behaviour, then it is suggested that a functional analysis is then required to ascertain the function of the noncompliant behaviour. This would not be considered a failure of the high-*p* procedure, but merely that the function of the noncompliant behaviour was not addressed using this intervention. Ethically, as the high-*p* sequence is a non-aversive and minimally intrusive intervention, it could be considered that the least intrusive, least aversive intervention was employed first, suggesting that an alternative intervention should be employed.

The development of the high-*p* procedure and fading sequence into a treatment manual will also provide parents and caregivers with another treatment alternative to consider when looking at ways to best manage their child's noncompliance. Not every behavioural intervention is applicable to every behaviour problem in every setting, therefore by developing the high-*p* procedure into a treatment manual it will provide another possible avenue for the treatment of noncompliant behaviour in the home environment.

Furthermore, this will be done in an empirically supported manner (Kendall, 1998) which will provide objective assessment of the treatment outcomes. This evaluation will ensure that the procedure is effective when presented in this format. It will also be possible to suggest guidelines for when the therapy presented in a workbook format is, and is not applicable. This will allow strengths and limitations to be discovered, making it possible to highlight situations where alternative treatments may be more beneficial allowing the high-*p* intervention to be used in more effective ways.

On the whole, parents and caregivers of children with a developmental disability may be readily accepting of a nonaversive and minimally intrusive home-based intervention such as the high-*p* procedure, that may reduce possible conflict situations with regard to straightforward compliance situations. Especially if it can reduce problematic and stressful noncompliance situations by shifting the balance from noncompliant to compliant behaviour, without removing behaviours from an already limited repertoire in the process.

This study therefore proposes to replicate the high-*p* procedures and stimulus fading sequence employed by Ducharme and Worling (1994). To do this a treatment manual / workbook was developed and evaluated with three children with developmental disabilities using a single subject multiple baseline design with stimulus fading and follow-up components. This enabled the reliability of the stimulus fading sequence to be evaluated. It also allowed assessment of whether parents and caregivers could successfully implement and manage the procedures in this format, and whether it suited their family's needs. To gauge the acceptance of the intervention participants were asked to complete a short consumer satisfaction questionnaire on completion of the study. This study also assessed whether the procedure is effective without a functional analysis being performed first. Combined, this allowed the future potential development of the high-*p* and stimulus fading procedure presented in the workbook format to be assessed.

Section 3

Method

3.1 Participants and Setting

Participants were members of a family, either a standard nuclear or foster family. In each family both parents and the target child were involved. The families which participated in the study were recruited with the assistance of a Special Needs School and its attached satellite classes located at other Primary (Elementary) Schools. Individual details of the children and their families are discussed below. Each participant family was supplied with a copy of an information sheet briefly outlining the study, and an attached consent form (see Appendix A). Participant families were advised that the study had been reviewed by the University of Canterbury Human Ethics Committee, and that anonymity and confidentiality would be maintained at all times. Pseudonyms have been used for all participants in this study. Informed written consent was obtained from parents before commencing. As the participant children were under the age of 16 years, parental consent was given for their participation.

The very nature of this study and the workbook designed to complete it required the parent(s)[8] of each child to act as both experimenter and trainer. This was necessary to see if the high-*p* procedure and the fading sequence could be developed into a treatment manual, and secondly if the procedure when presented in this format could be adequately managed by the participant's parent(s). This resembles Ducharme and Worling's (1994) study which also used the parents of the participants as trainers - experimenters. The actual settings where the high-*p* procedure were employed was dependent on the nature of each request made to the child, and the time it was presented.

[8] The term 'parents' includes other adult caregivers.

3.1.1 Case One – Mike (Pilot Study)[9]

Six year old Mike and both his parents were involved in the initial study. Mike's older (developmentally normal) sister did not participate. Mike's parents reported that he has microencephaly resulting in a mild intellectual disability with a developmental age of three years and cerebral palsy (type unspecified). They also stated that he sometimes displayed autistic-like stereotypic behaviours and possibly suffered from epilepsy, both of which were diagnostically unconfirmed. Mike was reported not to be on medication at the time of the study. His parents reported that he was frequently noncompliant to their requests, and would often tantrum when repeatedly asked to perform a request.

3.1.2 Case Two - Gale

The second set of participants in this study were 6 ½ year old Gale and her parents. Her parents reported that she has cerebral palsy (type and cause unknown) as well as developmental delay, and had a developmental age of 2 ½ years at the time of study. Gale also experienced difficulties with fine motor control. She has two older developmentally normal siblings who did not participate. Gale's parents had previously tried time-out to manage aggression and screaming, and had also tried guided compliance procedures, both of which they reported were unsuccessful. They also stated that Gale was particularly noncompliant when "don't" requests were made to her.

3.1.3 Case Three - Lisa

The third participants were 10 year old Lisa and her stepparents. The stepparents' own two children (both older), and two other children aged 15 and 18 for whom they provided weekday respite care, did not participate. Lisa was reported to suffer from Downs Syndrome and hemiplegia (left-side) as a result of a right-hemisphere stroke at birth. Lisa's stepmother stated that Lisa also suffered from epilepsy which was controlled with Epilim.

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[9] This first case study was run as a pilot study to, a) ascertain if the procedures laid out in the treatment manual could be easily followed, b) highlight any problems with the workbook, and c) ascertain if any improvements to the workbook or procedures could be made. After this initial study, minor changes to the layout of the recording sheets were made before the remaining studies were conducted.

She also was reported to have limited sight and expressive language ability, she also has some fine, but no gross motor control problems. Her stepparents stated that Lisa's developmental age was 2 years at the time of study. She was consistently noncompliant for her stepparents, but could be co-operative when she wanted to be. They also reported that she enjoyed attention, and became extremely jealous when attention was paid to others.

3.2 Experimental Design

As this study is a partial replication of Ducharme and Worling (1994) a similar experimental design was employed. However, as the format through which the actual intervention was presented differed, the experimental design was altered accordingly. Specifically, the study employed a single-subject multiple-baseline across behviours design followed by additional stimulus fading and follow-up components. This experimental design allowed a full within subject evaluation of the effects of the high-*p* sequence on the low-*p* requests to be evaluated in the following ways

1. The efficacy of the high-*p* request sequence to increase levels of compliance with low-*p* requests,
2. Enable the assessment of any generalisation or interaction effects between requests,
3. How well the fading sequence produced maintenance of any increases in compliant behaviour, and
4. If the length of time the high-*p* sequence was implemented influences 1, 2 and 3 above.

The multiple-baseline across behaviours design was replicated over the three cases.

3.3 Dependent Variable and Recording Procedures

The dependent variable used in all stages of the study was compliance to each low-*p* request made. This was calculated by dividing the number of requests that resulted in compliance by the total number of requests made on that day and multiplying by 100. Levels of compliant responses were calculated on a daily basis. The recording procedures used to calculate the levels of compliant responding are detailed below (Section 3.6.2).

Compliance for the purposes of the study is defined as -

> ***Beginning to comply with the request within 10 seconds, and completion of the request within a reasonable time.***

Noncompliance was defined by failure to meet this criteria or starting to comply with the request within the 10 second period but failing to complete the request. All time measurements were determined by the parent counting to him or herself. The term 'within a reasonable time' was included as some requests parents issue to their child require differing lengths of time to complete. It was considered unfair to both child and parent to stipulate a fixed time interval that could be easily exceeded by a time consuming request.

Reliability checks performed in the family home by a second observer and by the researcher (if necessary) to highlight any possible inconsistencies in the recording procedure[10]. As far as possible, checks were performed on a daily basis. Details of how reliability were performed are given below (Section 3.6.3, p. 53).

3.4 Independent Variables

The independent variables used in the study were the presentation of the high-*p* request sequence and then the gradual removal of this sequence in the fading component. Details of how the high-*p* sequence was introduced and faded out are given in Section 3.6.2 .

3.5 Consumer Satisfaction Questionnaire

A brief consumer satisfaction questionnaire was developed (see Appendix D) so the end users (parents of the target children) could evaluate and suggest how the workbook and the

[10] It is acknowledged that inconsistencies in the recording and monitoring of data will reduce the scientific rigour of this study. However, given that the overall intention of this study is to evaluate the possibility of developing the high-*p* procedure into a parent-managed home-based intervention, any inconsistencies which occur with the procedures at this point will no doubt occur if the programme were to be fully developed. So, if this assumption is correct, successful results that are achieved at this stage can be seen as a plus for the study. This is because they will demonstrate the effectiveness and support the robustness of the high-*p* procedure, despite the fact that it may not have been uniformly implemented.

high-*p* intervention could be further developed and improved. After the fading sequence was completed parents were asked to rate on a four-point scale their satisfaction with the procedure, express any difficulties experienced, how the procedure or workbook could be improved, whether they considered any parts unnecessary, did their child appear to enjoy the procedure, etc. Space was also provided for parents to add their own comments and suggestions.

3.6 Procedure - The High-p Workbook

3.6.1 Development

The workbook that was developed for this study is a 'manualisation' of the high-*p* intervention as proposed by Mace et al. (1988) and then further developed and modified by Ducharme and Worling (1994) (see Appendix B). The workbook in itself is thus a partial replication of Ducharme and Worling's study as it closely follows the procedures and experimental design that they employed. In particular, the selection procedure used to produce a list of high-*p* and low-*p* requests, and the implementation of the high-*p* sequence were closely replicated. A similar but slightly briefer format of the high-*p* request fading sequence was used in this study.

Development of the workbook took place by reproducing, modifying and adapting the experimental procedures used by Ducharme and Worling into a format that could be easily read and understood by a layperson. The workbook was designed to be an educational guide to all components of the high-*p* procedure and subsequent fading sequence. Throughout the development process the aim was to produce a manual that was both comprehensive and easy to understand and follow. Every attempt was made to make the procedure as simple as possible without removing the detail required to produce an effective and powerful intervention.

After the initial development, each section was reviewed by a second person to comment on clarity and procedural difficulties that may occur. Once the whole workbook was complete it was given to two mothers of young families to read. They were asked to comment on the clarity, readability, their comprehension of the procedures and express any difficulties they

envisaged they might have following the programme. Suggestions were then incorporated into the workbook. After a pilot study had been completed the final draft of the workbook was used with the other families.

The workbook was designed in sections which followed the method employed by Ducharme and Worling, but still kept in mind the aims and expectations of this study. As each section of the workbook was developed it was necessary to produce record forms, compliance graphs and tables, etc which would be required for the parent to complete that particular part of the intervention. The only part of the workbook that did not require development was the Compliance Probability Questionnaire which was used by Ducharme and Worling (1994) and Ducharme (1997) and was obtained from that author. This questionnaire required some minor modification to rephrase some of the questions into New Zealand English.

3.6.2 Structure and Content

The final workbook comprised of six sections plus an introduction. The six sections are

1. **Choosing Low-*p* and High-*p* Requests**
2. **Keeping Track of Low-*p* and High-*p* Requests**
3. **Baseline and Graphing**
4. **Applying the High-*p* Sequence**
5. **Fading the High-*p* Requests**
6. **Follow-up**

Each of these sections plus the introduction is briefly outlined below.

Introduction

The introduction section was designed to give a brief overview of the high-*p* procedure and how it was developed. It also stressed the point that the procedure was for increasing levels of compliance with requests the child could already perform, and was not for teaching new behaviours. It gives a brief introduction to the six sections of the workbook and gives

information that the parent will need to know before they start the study. It also informs the parent that the researcher will need to enter their home for training purposes and to observe several instances of compliant responding to ensure reliability and consistency throughout the study. It was also made clear to the parents that if they were unsure, or had problems understanding what they should be doing then they should contact the researcher immediately. This point was stressed many times throughout the workbook.

Section One - Choosing Low-p and High-p Requests

In this section parents were asked to complete the Compliance Probability Questionnaire (Ducharme, 1997) from which 10 low-*p* and 10 high-*p* requests would be selected for monitoring in the next section. The requests selected in this section were then monitored for five days to select the final requests to be used in the remainder of the study.

The Compliance Probability Questionnaire consists of 124 'everyday' requests that are used in a home environment, broken into sections such as dressing, self-care, play, academic, etc. A section is also provided for parents to list other requests which do not feature in the list. The parent was asked to cross out any request the child can not yet perform.

Parents were then asked to indicate the likelihood of their child complying with each request (using the definition of compliance above) if it was stated only once. Four response options were given - *almost always* (76-100% compliance), *usually* (51-75%), *occasionally* (26-50%), or *rarely* (0-25%). Parents were also asked to indicate if the request was particularly important to them.

After completing the questionnaire parents were asked to examine the *rarely* column and to select 10 of the requests which would form a pool of low-*p* requests to be monitored. Parents were asked to carefully consider which requests they selected. As a guideline it was suggested that they select requests that were both problematic and frequent in their presentation and were also important to them. If the parent did not identify 10 problematic requests in the *rarely* column then they were instructed to examine the *occasionally* column, again paying close attention to the requests they identified as important to them.

To select the pool of high-*p* requests the same procedure was used except parents were instructed to select requests from the *almost always* column. When selecting the high-*p* requests they were asked to select requests that were quick, fun and meaningful to both the parent and child.

Once the parent had selected the high-*p* and low-*p* requests to be monitored in the next stage of the study they were asked to write them into the workbook. Before they were asked to do this several instructions were given to the parents on how they should phrase and issue the requests.

1. Parents were asked to make the requests the same way each time. This was done to ensure they would be made in a consistent manner throughout the study.

2. Parents were instructed to phrase their requests in a 'positive' manner, or put another way, to phrase requests as 'do' or 'start' requests, rather than 'don't' or 'stop' requests. This point was included as a result of earlier research which demonstrated reduced compliance with 'don't' requests (Ducharme &Worling, 1994; Mace et al., 1988; Neef et al., 1983). Parents were also instructed not to phrase requests as a question. This not only avoids the situation of the child answering (and quite justly so) 'no' to a request they may find aversive but also ensures the child learns to discriminate between a legitimate question and a request disguised as a question.

3. When phrasing their requests, parents were also advised to use language that was developmentally appropriate for their child. This would ensure that requests made to their child were neither too complex or too simple.

4. When phrasing their requests parents were also asked to include the word 'please' when making their requests to make them sound less like commands or direct orders.

5. Parents were also instructed to gain their child's attention before they made a request. This included using their name when other people were in the room, to gain eye contact before making the request and to avoid making group requests such as 'everyone come to dinner now'.

At the end of this section (and all sections in the workbook) a list of important / essential points covered in that section was included.

Section Two – Monitoring Low-p and High-p Requests

This section was divided into two parts. In the first part instructions on the procedures to be followed to monitor the ten low-*p* and ten high-*p* requests chosen in Section One were given. The monitoring procedure described in this part was kept constant throughout the study, so care was taken to ensure the procedure was as straightforward as possible. Parents were required to monitor the low-*p* and high-*p* requests for five consecutive days before they could proceed to the next part. This part of the study also enabled parents to 'self-train' in using the recording procedures, so when they began recording baseline information in subsequent sections they were already proficient in doing so.

In the second part of this section, instructions were given on how to calculate daily percentage compliance values for the ten high-*p* and ten low-*p* requests. Following this instructions were given on how to select the final pool of five high-*p* requests and the three low-*p* requests to be used in the remainder of the study.

To complete the first part of this section a booklet titled *"Things to Keep Track of"* was produced (see Appendix C). This booklet contained record sheets for parents to fill out to monitor compliance of the low-*p* and high-*p* requests they selected. Parents were given instructions on how to correctly observe what happened when they issued the requests to their child. This instruction was given in the form of a decision checklist (following the definition of compliance given above) to see if an instance of compliance or noncompliance occurred.

If compliance occurred parents were instructed to give descriptive praise and mark the appropriate box on the compliance record sheet with a tick. If noncompliance occurred, parents were instructed to follow their usual routine and mark a cross on the record sheet. An example of a completed record sheet was included for parents to follow.

The first part of this section also contained information on how to make an agreement (reliability) check. As part of the acceptance criteria for the study there was a requirement that agreement checks by another adult had to be made on (as far possible) a daily basis. This person could be a partner, relative, friend, neighbour, etc who could observe an instance of compliance and independently make a decision if compliance occurred. After making their observation and depending on their decision, a second tick or cross was placed in the appropriate box on the record sheet. It was emphasised to parents that total agreement did not have to occur everytime, but if disagreement occurred two or three time in a row they were to call the researcher. This procedure was put in place as a safeguard to ensure that compliance was being measured in a consistent and reliable way and to indicate to the researcher if any discrepancies in the measurement of compliance may be occurring.

In this section of the workbook information was included on the procedures to be followed if a person other than the child's usual carer made a request. When this occurred compliance or noncompliance was to be recorded as above along with the initial of the person who made the request. This was included to indicate if levels of compliant behaviour altered when the person making the request(s) differed.

Finally in this part of the workbook parents were given guidance on how to correctly give descriptive praise which would follow all instances of compliance throughout the study. Instructions were also given to the parents to avoid 'staging' requests during the study.

In part two of this section the steps required to calculate daily percentage compliance values for the ten high-*p* and ten low-*p* requests were given. This involved counting the number of compliant and noncompliant responses made each day for each request and then using a printed table to calculate the percentage compliance value (see Appendix B, p. 127). Parents were then instructed to enter these values in the spaces provided in the right hand columns in the *"Things to Keep Track of"* booklet.

Once daily percentage compliance values had been calculated parents could then move on to work out which requests would be used for the remainder of the study. To do this they were asked to look at each of the ten low-*p* and ten high-*p* requests in turn and total up the five daily percentage compliance values they recorded for each request. To select the low-*p*

requests they were then asked to look at the totals of these requests and find the three lowest values. For a request to be considered for further inclusion in the study each total had to be under 200. This is the equivalent of an average compliance value of 40% or less, which is the cut-off determined for this study. The three requests with the lowest totals under 200 then formed the three low-*p* requests that would be used with the high-*p* intervention. The same procedure was used to select the pool of five high-*p* requests, except the requests with the five highest totals over 400 (or 80% compliance) were chosen.

Section Three - Baseline and Graphing

Once the low-*p* and high-*p* requests to be used with the intervention had been selected parents could then proceed to form a baseline before starting the treatment phase. A description for forming a baseline and how to fill in a graph of percentage compliance was given in this section.

To form a baseline parents were instructed to monitor compliance with the three low-*p* requests for five consecutive days. Compliance with the high-*p* requests was not monitored. Monitoring compliance with the three low-*p* requests was completed in the same way as in the previous section using a record sheet the same as in *"Things to Keep Track of"*. Since parents had already had experience in monitoring compliance no further instruction was deemed necessary.

In addition to monitoring compliance to form a baseline, parents were instructed on how to graph the percentage compliance results they obtained on a pre-formatted graph (see Appendix B, p. 132). The graphing section was included so parents could maintain a record of the changes in their child's compliant behaviour once the high-*p* sequence and fading phases were introduced. Brief instructions and a section of a completed graph were included.

Section Four - Applying the High-p Sequence

Once a baseline had been measured parents were instructed on how to use the high-*p* sequence. Previous to this, parents had already received training with the researcher

(including role playing and modeling where necessary) to ensure the sequence would be performed correctly.

As this study employed a multiple baseline experimental design, it was necessary to break the sequencing of this phase up so the high-*p* procedure would be used with the correct request at the appropriate time. Instructions were given to the parents on when to begin using the high-*p* procedure with each particular request. In addition, it was also made clear on the record sheets which request(s) the parent should be using the high-*p* sequence with through the use of shading and written instruction. The high-*p* sequence was introduced to each of the three low-*p* requests at four day intervals, and was in place for five days before the fading sequence was commenced.

To perform the high-*p* sequence parents were instructed to firstly select at random three of the five high-*p* requests chosen in section two. Parents were then instructed to make the three high-*p* requests to their child spaced no more than 10 seconds apart. Within 5 seconds of the child complying to the third high-*p* request, the parent was then instructed to issue the low-*p* request. Parents were instructed not to talk to their child in the period between the high-*p* and low-*p* request.

Parents were told to give descriptive praise for all instances of compliance. Compliance with the low-*p* request was then recorded using the same criteria as before. If noncompliance with the low-*p* request occurred, parents were instructed to ignore the child and avoid eye contact. If noncompliance with any of the high-*p* requests occurred the parent was instructed to abort the trial at that point and try again in approximately one minute.

Section Five - Fading the High-p Requests

After the high-*p* sequence had been in effect with the third low-*p* request for five days the fading sequence was commenced. This sequence closely followed the procedure used by Ducharme and Worling (1994).

Each stage of the fading sequence was in place for two days. The steps of the fading sequence were –

1. Reducing the number of high-*p* requests from three to two
2. Reducing the number of high-*p* requests from two to one
3. Increasing the time duration between the high-*p* and low-*p* request from 5 to 10 seconds
4. Increase the time duration between the high-*p* and low-*p* request from 10 to 15 seconds
5. Increase the time duration between the high-*p* and low-*p* request from 15 to 20 seconds and add a distraction.

During step five the distraction used was to talk to the child during the 20 second period. Again the time duration was determined by the parent counting to him/herself. Descriptive praise was given for all instances of compliance. Parents were instructed to ignore and avoid eye contact for noncompliance. Parents were asked to continue monitoring and graphing of compliance as they had previously. After the fading sequence had ended the high-*p* request was no longer used.

Section Six - Follow-up

When the fading sequence had been completed follow-up measures were taken at 1, 3 and 5 weeks. Parents were contacted and asked to monitor compliance with the three low-*p* requests as they had previously done for two days within each follow-up week. Parents were asked to choose any two days during the week to record compliance. Parents were reminded to use descriptive praise for compliant behaviour and to ignore their child and avoid eye contact if noncompliance occurred.

Section 4

Results

Following the multiple-baseline across behaviours design with replication across cases, the results are presented case by case, examining the within subject replication of any effects the high-*p* sequence has had on percentage compliance with each of the three low-*p* requests. Results from the Consumer Satisfaction Questionnaire are presented last.

Visual analysis examining the variability, level and trend (see Cooper, Heron & Heyward, 1987) to assess whether meaningful, positive behaviour change occurred as a result of the high-*p* sequence. To assist this visual analysis, trend lines were placed on the figures which examine percentage compliance with the low-*p* requests, using the Regression Line function of the Jandel SigmaPlot® Scientific Graphing Software used to create the figures. This function automatically calculates and places a regression line using the least squares method. This method was chosen over the freehand method or split-middle line of progress method (Cooper, Heron & Heward, 1987) for reasons of speed and reliability. However, given the variability that occurred in some data sets, discrepancies occur between a visual analysis of trend and the least squares regression line. These discrepancies are noted where they occur.

In addition to the figures which examine percentage compliance with low-*p* requests, a second set of figures have been included which provide a summary of absolute request frequency and absolute frequency of compliance with requests. As a fixed number of trials was not specified for any given day (with the intent of approximating free-operant behaviour), the possibility exists that a very low frequency of requests may be made, influencing the percentage compliance values obtained. For example, if say only two requests were made, of which only one was complied with, percentage compliance would be 50%. This is a problem with converting low frequency data into percentages, one which cannot be easily solved, but which is reduced somewhat if comparisons with

the actual frequency of requests are made. The frequency figures provide one way of assessing whether high percentage compliance resulted from a high level of compliance with a number of requests, or occurred as a result of a low level of compliance with few requests. Vertical bars on the figures represent the total number of requests issued for that day, and solid dots represent the number of compliant responses made to those requests. As compliance increases the solid dots should tend toward the top of the bars.

4.1 ***Case One*** – Mike (Pilot Study)

After completing the Compliance Probability Questionnaire and subsequent monitoring stages, the three low-*p* requests Mike's parents selected were

1. "Get me your _____ please Mike."
2. "Mike, pack up your _____ please."
3. "Stay close to me please Mike."

Across the monitoring stage these requests had mean percentage compliance values of 25%, 16% and 30% respectively.

The pool of five high-*p* requests selected were

1. "Give me a hug."
2. "Give me five."
3. "Give me a kiss."
4. "Shake my hand."
5. "What's your name."

The high-*p* requests had mean percentage compliance values during the monitoring stage of 80%, 82%, 91%, 93% and 100% respectively.

Throughout the study agreement checks were regularly performed by both parents. No discrepancies were noted.

Figure 1 shows percentage compliance results for Mike for all three low-*p* requests across the baseline, high-*p*, fading and follow-up phases.

During baseline, compliance with Request One averaged 18%, with a very slight decreasing trend. When the high-*p* sequence was introduced, an immediate increase in percentage compliance occurred, with a mean percentage compliance of 55% occurring across this phase. A moderate degree of variability with a slight increase in trend occurred across this phase. When the fading sequence was introduced, percentage compliance initially remained at the same level as the high-*p* phase. Good stability in the data occurred in this phase with a slight decrease in trend. The mean percentage compliance for the fading phase was 52%. It should be noted that due to a misunderstanding by Mike's parents, the fourth phase of the fading sequence (increasing the time interval between the high-*p* request and the low-*p* request from 10 to 15 seconds) occurred for four days, not two, for all three low-*p* requests. In the follow-up phase, mean percentage compliance of the one and four week follow-up probes increased to 57% with a slightly increasing trend.

For Request Two, mean percentage compliance during the baseline phase was 21%. The least squares linear regression line suggests a slight increase in trend during this phase. However, this trend is confounded by the final data point in this phase, which showed a sharp increase in compliance on this day. The sharp increase in compliance may be the result of response generalisation from the high-*p* request sequence implemented with Request One, but as a similar increase in compliance was not shown with Request Three this supposition remains unconfirmed. If the final data point is ignored, a decreasing trend would have occurred in this phase. Mean percentage compliance in the high-*p* phase increased to 45% with an overall increasing trend. With the exception of the sixth data point, percentage compliance values slightly decreased toward the end of this phase to form a slight inverted 'U-shaped' function. In the fading sequence phase mean percentage compliance decreased to 35%. Initially little decrease in the level of the data occurred between the high-*p* and fading phases. With the exception of the fourth and twelfth data points (where percentage compliance dropped to 0%), the data showed good stability, with a decrease in trend. In the follow-up phase, mean percentage compliance across the follow-up probes was 34%. No change

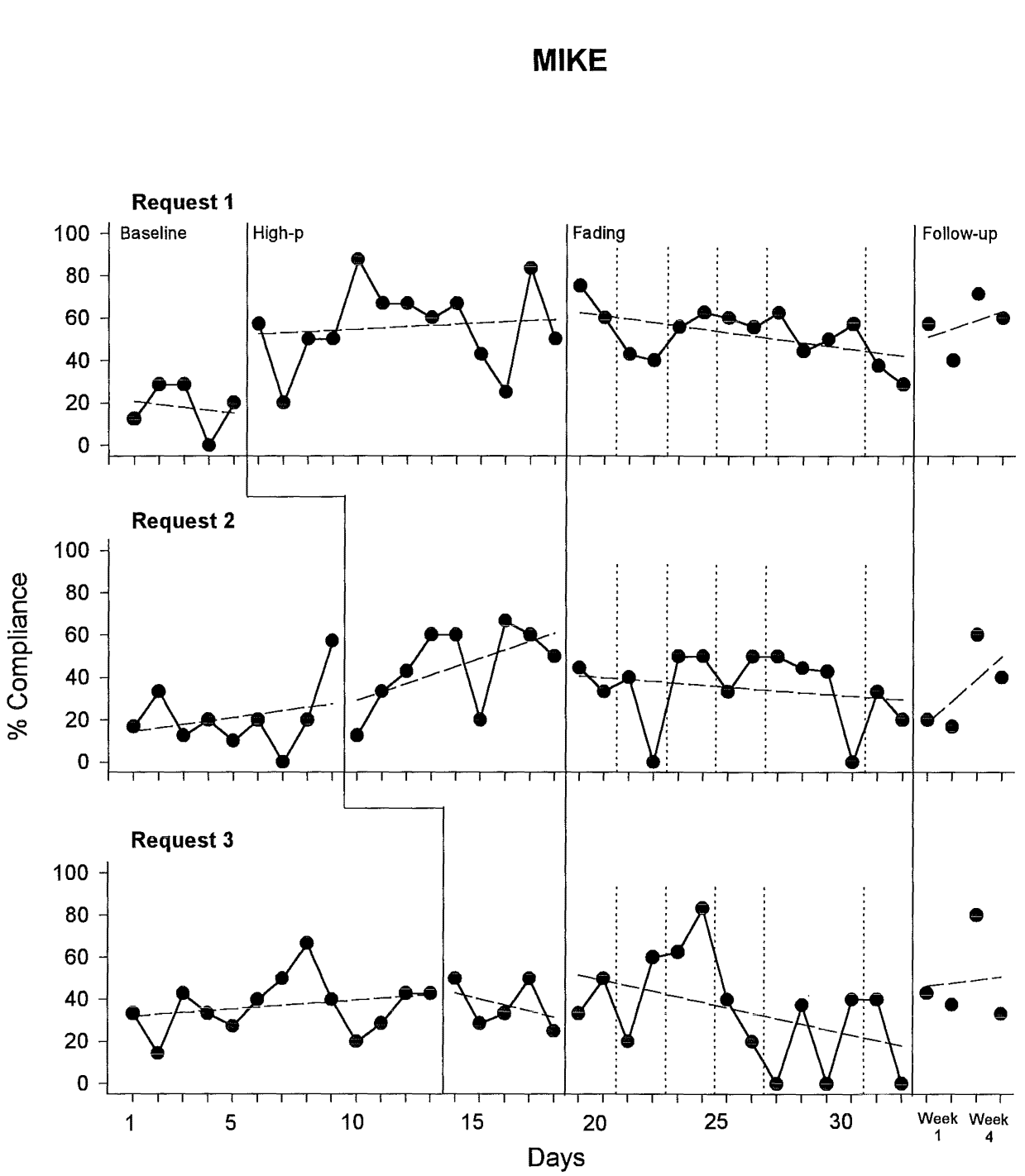

Figure 1. Percentage compliance to the three low-probability requests for the baseline, high-probability sequence, fading and follow-up phases for Mike. Dashed lines in each phase represent trend lines placed by least-squares linear regression. Vertical dotted lines in fading phase indicate stages of the fading sequence.

in level occurred between phases. A strong increase in trend occurred across this phase with higher percentage compliance values (60% and 40% respectively) being obtained at four weeks follow-up.

With Request Three mean percentage compliance for the baseline phase was 37%. A moderate degree of variability occurred in the data with across this phase (range = 14%-67%). The regression line suggests a slight increase in trend, however, due to the instability of this data this trend line should be interpreted with caution. When the high-*p* sequence was introduced no change in the level of percentage compliance occurred, but a decrease in trend is suggested by the regression line. Mean percentage compliance for this phase was 37%. During the fading sequence phase a high degree of variability occurred in the data (range = 0%-83%). As such the decrease in trend shown by the regression line should be interpreted with caution. There was a slight decrease in the mean percentage compliance for this phase to 35%. Mean percentage compliance increased in the follow-up phase to 48%. Data across this phase was maintained at higher, slightly variable level across the follow-up probes.

Figure 2 shows the total or absolute number of requests issued to Mike for the baseline, high-*p*, fading and follow-up phases for each of the three low-*p* requests. For all three requests the mean number of requests issued across the baseline, high-*p*, fading and follow-up phases were very similar. For Request One the mean number of requests issued for the four phases were 7.6, 6.2, 7.2 and 6.0 respectively (range = 4-11 requests). For Request Two the mean request values were 6.1, 5.6, 6.3 and 5.3 respectively (range = 3-10 requests). For Request Three the mean request values were 6.2, 6.4, 6.3 and 6.5 respectively (range = 3=11 requests).

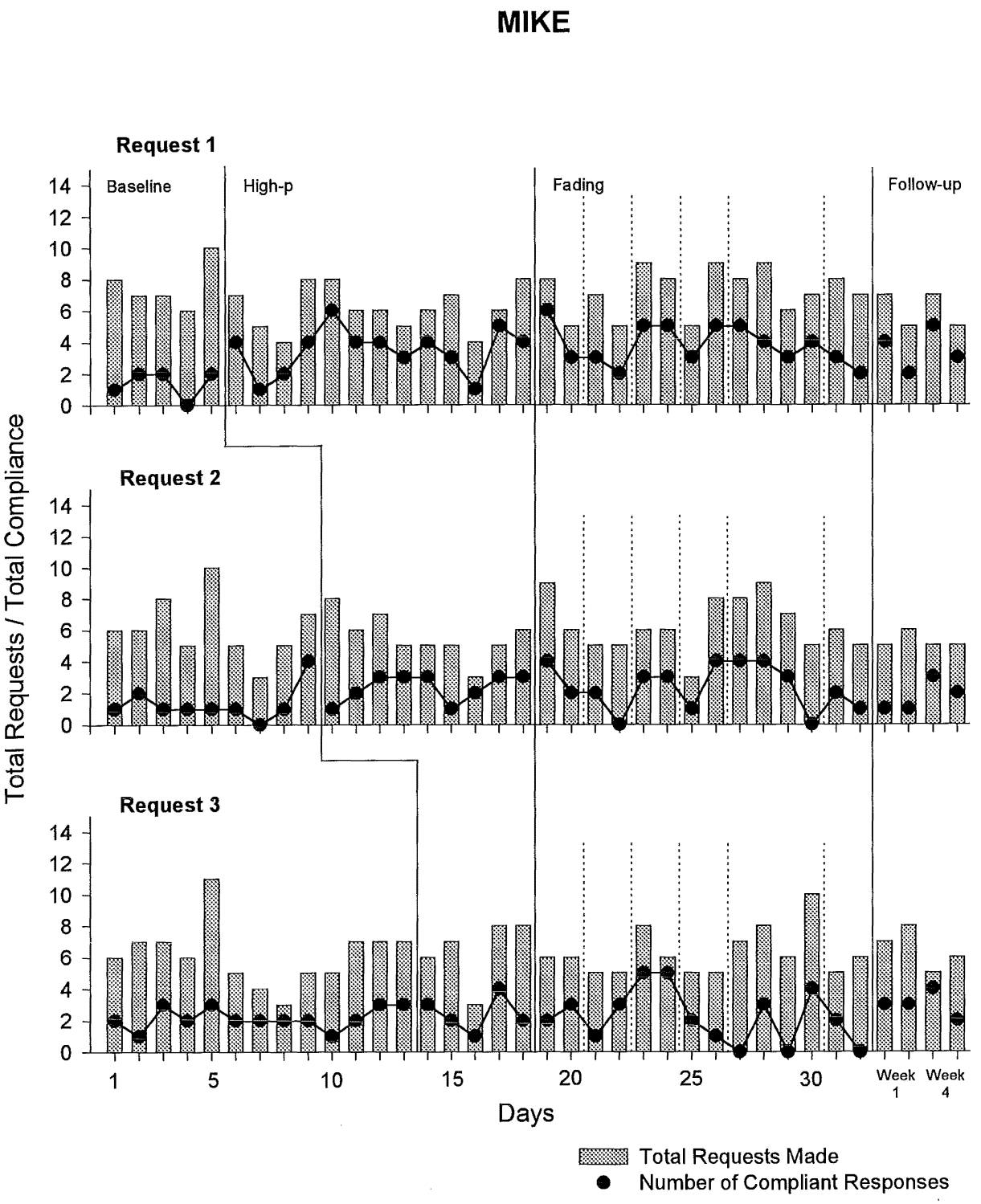

Figure 2. Total (absolute) number of requests made and number of compliant responses for the three low-probability requests for the baseline, high-probability sequence, fading and follow-up phases for Mike. Vertical dotted lines in fading phase indicate stages of the fading sequence.

4.2 Case Two – Gale

After completing the Compliance Probability Questionnaire and subsequent monitoring stages, the three low-*p* requests Gale's parents selected were

1. "Please go to the toilet Gale."
2. "Stay on the toilet please Gale."
3. "Please pick up the _____ Gale."

During the monitoring stage these requests had mean percentage compliance values of 20%, 21% and 31% respectively.

The pool of five high-*p* requests selected were

1. "Jump up and down."
2. "Give me five."
3. "Give me a hug."
4. "Clap hands."
5. "What's your name."

The high-*p* requests had mean percentage compliance values during the monitoring stage of 90%, 100%, 100%, 97% and 100% respectively.

Throughout the study agreement checks were regularly performed by both parents. No discrepancies were noted.

Figure 3 shows percentage compliance results for Gale in the same way as in Figure 1.

Request One had a mean percentage compliance value of 9% during the baseline with a slight increase in trend. However, as only five data points exist for this phase and some variability is evident, this trend line should be interpreted with caution, especially as visual analysis would suggest that the trend appears to be flat, or slightly decreasing. When the high-*p* sequence was introduced there was no initial increase in the level of the

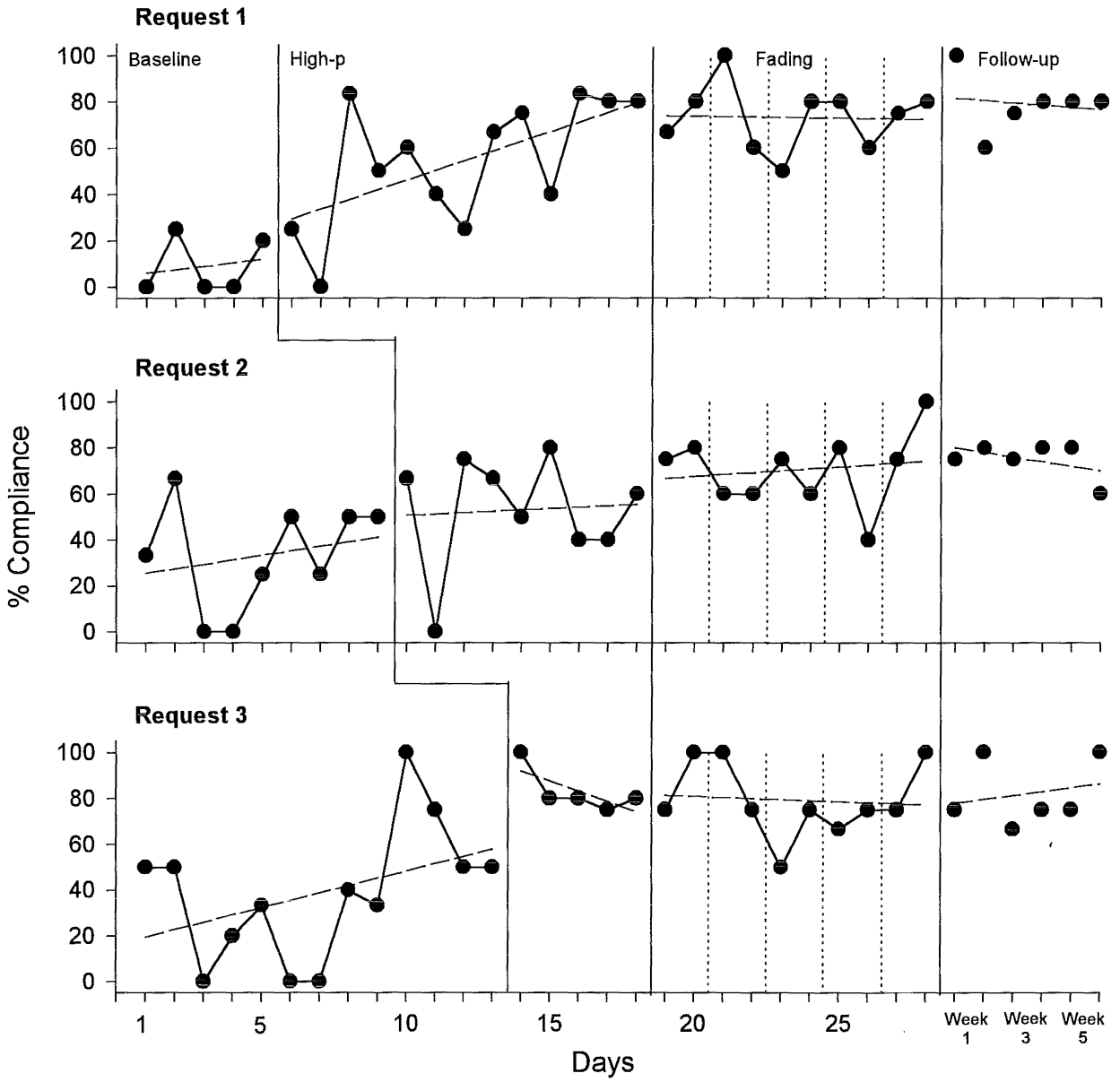

Figure 3. Percentage compliance to the three low-probability requests for the baseline, high-probability sequence, fading and follow-up phases for Gale. Dashed lines in each phase represent trend lines placed by least-squares linear regression. Veritcal dotted lines in fading phase indicate stages of the fading sequence.

data between the two phases. Despite a large degree of variability initially, there was a strong increase in trend across this phase, with percentage compliance increasing to 80% at the end of this phase. Mean percentage compliance was 55% across the high-*p* phase.

When the fading sequence began percentage compliance remained high. Some degree of instability in the data was evident, but this lessened toward the end of this phase. Mean percentage compliance was 73% across the fading sequence. The least squares regression line suggests that no overall change in level occurred across this phase. Mean percentage compliance increased to 79% across the follow-up phase. Some variability was evident during the first week of follow-up, however the data stabilised over the remaining weeks. A slight decrease in trend was evident across this phase.

Compliance with Request Two was highly variable during the baseline phase. Percentage compliance ranged between 0% and 67% across this phase, with a mean of 33%. Toward the end of the baseline period variability reduced slightly. There was a slight increase in trend across this phase, with percentage compliance values of 50% recorded for the last two data points. When the high-*p* sequence was introduced, no change in level between the two phases was evident. With the exception of the second data point in this phase (where compliance decreased to 0%) data were more stable across this phase. Mean percentage compliance across the high-*p* phase increased to 53% relative to baseline.

With the introduction of the fading sequence, a slight increase in the level of the data can be seen compared to the end of the high-*p* phase. Good stability was evident in the data at the beginning of this phase, with variability marginally increasing across the final three data points. A slight increase in trend occurred across the fading sequence phase. Mean percentage compliance was calculated at 71% across this phase. Results from the follow-up data show good stability with mean percentage compliance being maintained at 75% despite full withdrawal of the high-*p* sequence. The least squares regression line suggests a slight decrease in trend. This can, however, be accounted for by the decrease in compliance that occurred with the final data point. If this last point is ignored, then the trend appears flat by visual analysis.

Percentage compliance was very variable during the baseline phase for Request Three. Percentage compliance ranged between 0% and 100% during this phase, with a mean of 39%. The regression line suggests that an upward trend occurred across this phase, however due to the instability of the data this trend should be interpreted with caution. A large portion of the variability during this phase can be attributed to a low number of requests that were issued on some days during this phase (discussed below). When the high-*p* sequence was introduced a notable increase in the level of percentage compliance was evident. Mean percentage compliance was 83% across this phase. Good stability is evident in the data, with a slight decrease in trend. When the fading sequence was introduced, no appreciable change in the level of the data occurred. Variability was low, with a slight decline in trend. Mean percentage compliance remained high at 79%. Mean percentage compliance for the follow-up phase slightly increased to 82%.

Figure 4 shows the actual frequency of requests and compliant responses that were made for Gale as displayed in Figure 2. For Request One the mean number of requests issued across the baseline, high-*p*, fading and follow-up phases were 4.4, 4.9, 4.9 and 4.6 respectively (range = 3-6 requests). For Request Two the values were 3.6, 4.6, 4.7 and 4.6 (range = 2-6 requests). For Request Three the values were 3.0, 4.6, 3.7 and 3.8 (range = 1-5 requests). As mentioned above, the lower number of requests that were issued during the baseline phase with Request Three explains some of the variability found in the percentage compliance values obtained across this phase. This is particularly noticeable on Day 10, where 100% compliance was obtained with only two requests issued. Obviously a decrease of only one compliant response would decrease compliance by 50% on this day.

The high degree of variability that occurred during the baseline phase of Request Two can also be partly attributed to a lower number of requests issued during this phase.

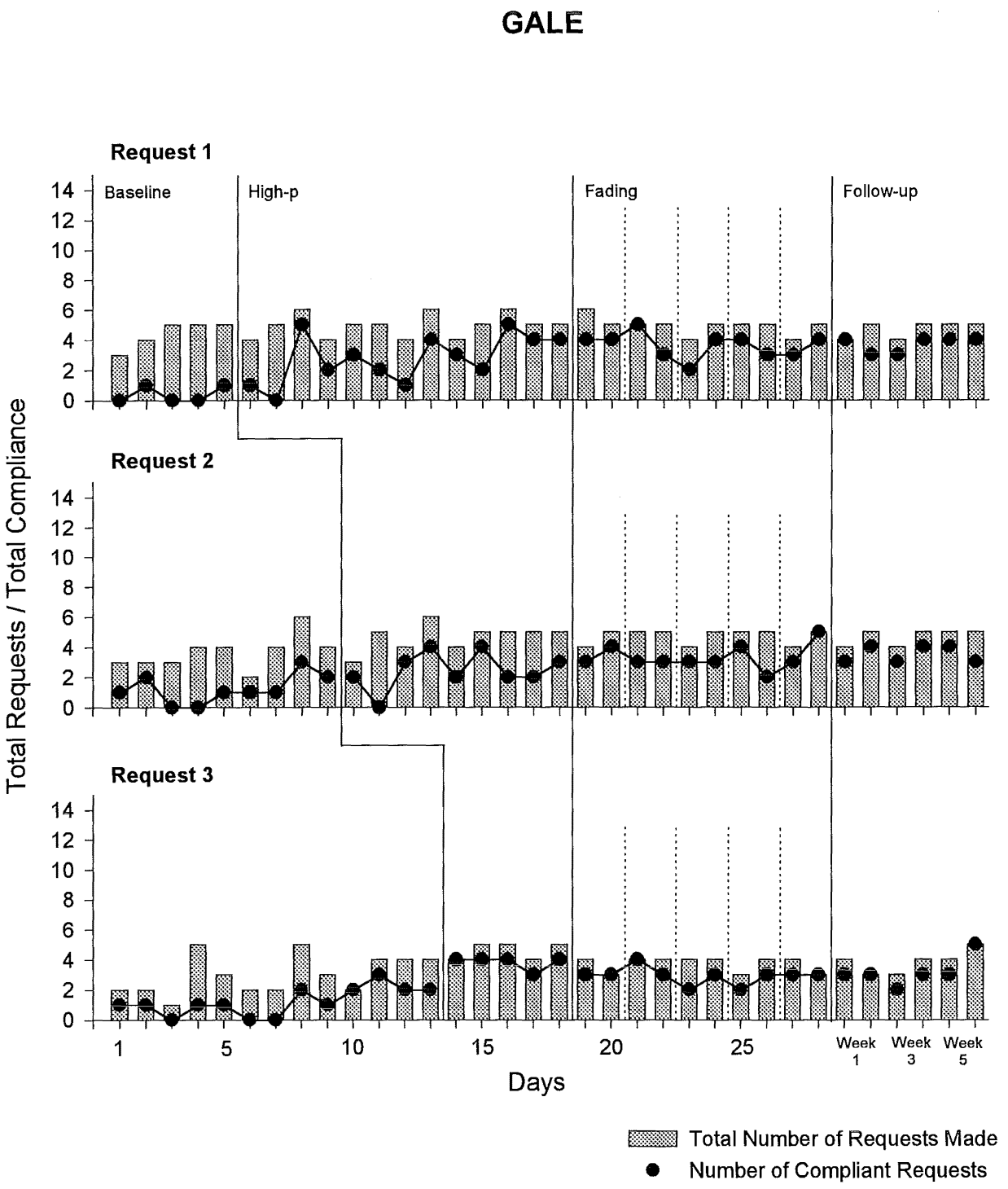

Figure 4. Total (absolute) number of requests made and number of compliant responses for the three low-probability requests for the baseline, high-probability sequence, fading and follow-up phases for Gale. Veritcal dotted lines in fading phase indicate stages of the fading sequence.

4.3 Case Three – Lisa

After completing the Compliance Probability Questionnaire and the monitoring stage of the workbook, the three low-*p* requests that were selected were

1. "Please speak quietly Lisa."
2. "Please share your toys Lisa"
3. Please be gentle Lisa"

These three requests had the lowest percentage compliance of the 10 monitored during this stage with percentage compliance values of 41%, 27% and 48% respectively.

The five high-*p* requests that were selected were

1. "Clap your hands."
2. "Give me a hug."
3. "Give me five."
4. "Get your dolls."
5. "Sit at the table."

All five high-*p* requests had 100% compliance during the monitoring stage.

Throughout the study agreement checks were regularly performed by both parents. No discrepancies were noted.

The results for this case are presented in a slightly different format than the previous two in that they also include a post-hoc analysis of percentage compliance during the monitoring stage of the programme. The 'monitoring' phase was included in the data analysis to provide a baseline additional to the workbook baseline phase so comparisons can be made between the 'monitoring' and the 'baseline' phases. This same post-hoc analysis was not able to be performed with the other two cases as this data was not kept by either the researcher or the parents.

Figure 5 shows percentage compliance results for Lisa for all three low-*p* requests across the monitoring stage when low-*p* and high-*p* requests were selected, the baseline, high-*p*, fading sequence and follow-up phases.

During the monitoring phase, Request One showed a steadily decreasing trend. Little variability occurred in the data, with the final two data points stabilising at 27%. Mean percentage compliance for the phase was 41%. When the actual baseline measures as defined by the workbook were taken, no change in the level of percentage compliance occurred. A steep increase in trend and percentage compliance occurred across this phase, with high percentage compliance values being obtained at the end. Mean percentage compliance for this phase was 43%, which differs little from the mean in the previous phase. However this alone does not reflect the true pattern in the data.

When the high-*p* sequence was introduced there was an initial decrease in percentage compliance. This decrease occurred with all three low-*p* requests on this day. Compliance then steadily increased again, until the high-*p* sequence was introduced with Request Two, when a drop in percentage compliance occurred. Percentage compliance steadily increased to 100% at the end of this phase. For an unknown reason the final day of the high-*p* sequence (Day 18) was not recorded or completed for all three low-*p* requests. Mean percentage compliance for the high-*p* phase was 69%. When the fading sequence was introduced a slight decrease in percentage compliance occurred. Percentage compliance remained stable with a very slight increase in trend across the fading sequence, except for a slight increase in percentage compliance that occurred on the last day of this phase. Mean percentage compliance for this phase was 71%. Results from the follow-up phase indicates that percentage compliance remained high and stable with a slightly increasing trend, with mean percentage compliance slightly increasing to 77%.

Mean percentage compliance during the monitoring phase with Request Two was 27%. The least squares regression line suggests a flat trend across this phase. However, visual analysis shows that a 'v' shaped function occurred, with percentage compliance 'bottoming-out' on Day Three. In the baseline phase compliance initially increased over the first four days in a similar way to Request One. After the high-*p* request sequence

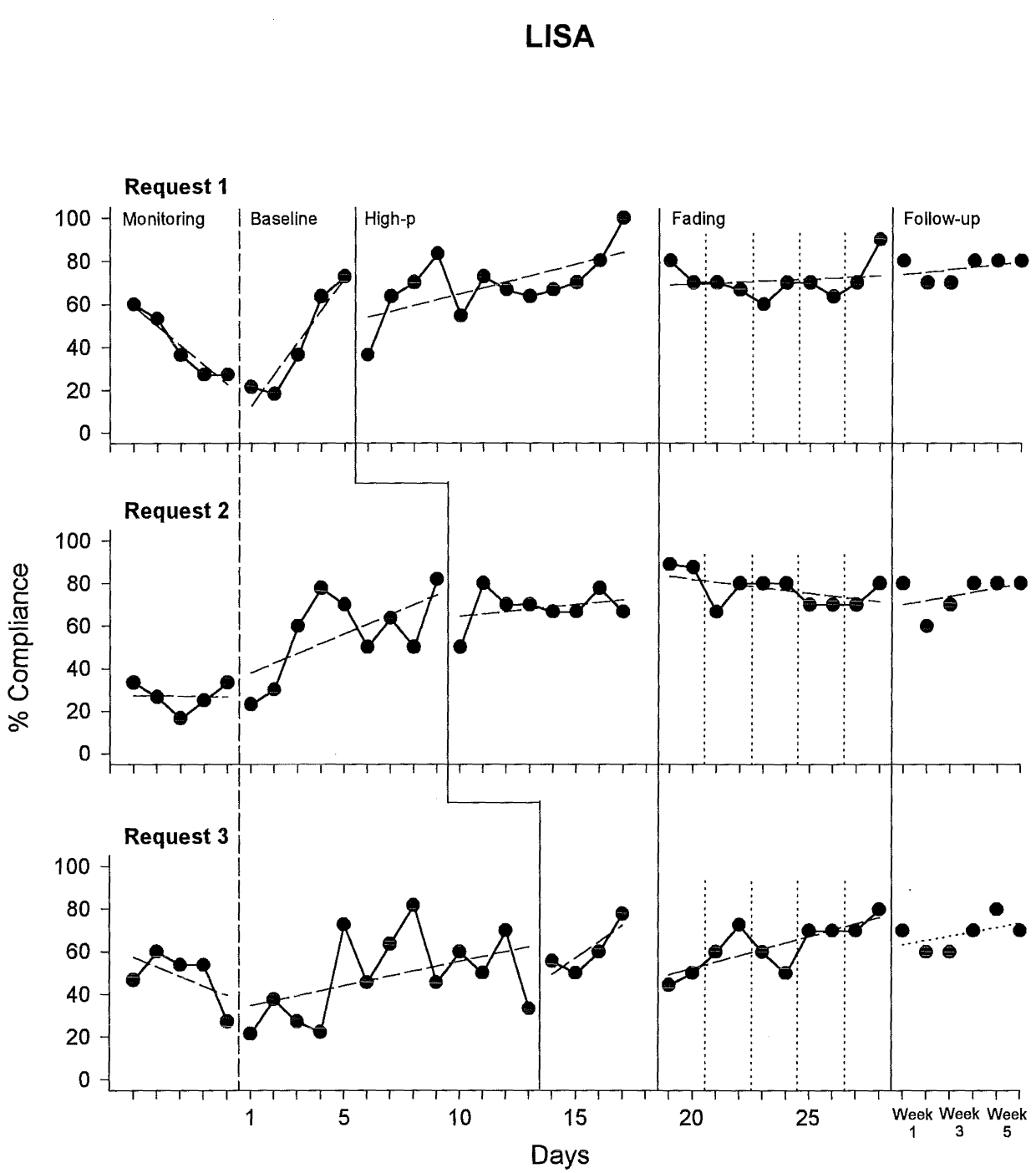

Figure 5. Percentage compliance to the three low-probability requests for the monitoring, baseline, high-probability sequence, fading and follow-up phases for Lisa. Dashed lines in each phase represent trend lines placed by least-squares linear regression. Veritcal dotted lines in fading phase indicate stages of the fading sequence.

was introduced with Request One, percentage compliance became more variable for the final part of the baseline phase. The regression line suggests an increasing trend over the baseline phase. Mean percentage compliance was 56% for this phase.

As mentioned above, when the high-*p* sequence was introduced with Request Two, an initial drop in compliance occurred. Compliance then stabilised across the remainder of the phase, with a slight increase in trend. Mean percentage compliance for this phase was 69%. When the fading sequence was introduced an increase in the level of percentage compliance occurred. Data across this phase showed good stability with a slight decrease in trend. Mean percentage compliance slightly increased to 77%, across this phase. Data from the follow-up phase showed good stability with a slight increase in trend.

Data from the monitoring phase of Request Three shows that a decrease in trend occurred. Mean percentage compliance for this phase was 48%. Data across the baseline phase show a high degree of instability, with an increase in trend suggested by the regression line. Mean percentage compliance across the baseline phase was 49%. With introduction of the high-*p* sequence an increase in trend occurred. Good stability was evident in the data with mean percentage compliance equalling 61% across this phase.

With the introduction of the fading sequence there was an initial decrease in percentage compliance for Request Three. Across this phase the data showed acceptable stability with a slightly increasing trend. Mean percentage compliance was 63% for this phase. No overall decrease in percentage compliance was evident from the follow-up data for this request with mean percentage compliance equalling 68%. The data show good stability across this phase with a slight increase in trend.

Figure 6 shows the actual or absolute frequency of requests and compliant responses across the monitoring, workbook, high-*p*, fading sequence and follow-up phases for Lisa. For Request One the mean number of requests issued across these phases were 12.6, 11.6, 10.1, 10.0 and 10.0 respectively (range = 6-15 requests). For Request Two the mean number of requests issued were 13.2, 10.4, 9.5, 9.6 and 10.0 respectively

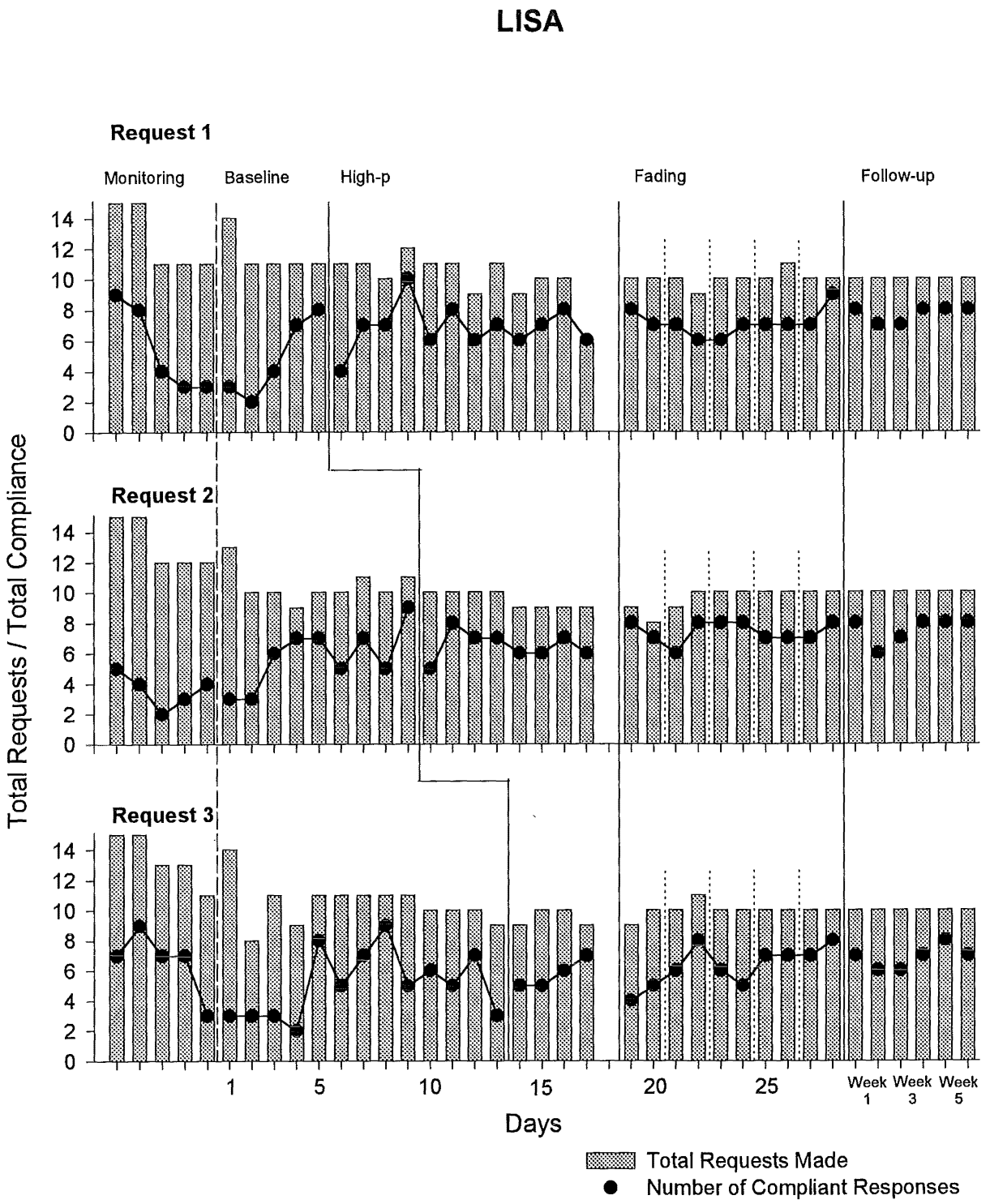

Figure 6. Total (absolute) number of requests made and number of compliant responses for the three low-probability requests for the monitoring, baseline, high-probability sequence, fading and follow-up phases for Lisa. Veritcal dotted lines in fading phase indicate stages of the fading sequence.

(range = 8-15 requests). For Request Three the mean values were 13.4, 10.5, 9.5, 10.0 and 10.0 respectively (range = 8-15 requests). Of note, a higher frequency of requests was issued with this case relative to the other two. It is unknown whether this is representative of the free-operant frequency of these requests outside of experimental conditions, or if some degree of staging occurred, despite being instructed otherwise. A misunderstanding occurred on the first two days of the monitoring stage, when Lisa's stepmother thought she was required to make 15 requests with each of the 10 low-*p* and 10 high-*p* requests selected, as this corresponded to the number of boxes supplied on the recording sheets.

4.4 Consumer Satisfaction Questionnaire

The parents of all three participants completed the consumer satisfaction questionnaire on completion of the follow-up phase of the study. Although a quantitative approach could have been used to examine the replies to the questionnaire, given the small number of replies a great deal of useful information will be lost using this approach. Instead a more qualitative approach was used.

Overall, all three families reported that they were mostly or very satisfied with the high-*p* intervention, and that it was a positive way to treat noncompliance in the home. One family replied that it "was great to learn another way to deal with our child's behaviour – one that works and helps me to keep my cool!". However the reply of another family was not as positive, reporting less satisfaction with the programme. This family appeared to have preconceived expectations about the high-*p* procedure which may have influenced their responses to the questionnaire.

Two of the three families reported that the programme fitted their needs and was generally what they expected. They also stated they would recommend the programme to someone in a similar situation to themselves. These families also reported that they felt confident about using the procedure to treat other compliance problems in the future.

Generally most families found the programme difficult. They reported that it was somewhat stressful and that the workbook was too long and hard to follow. It was also suggested that more therapist contact would have been useful. They also reported that recording and graphing procedures were considered to be time consuming when time was already limited. However, they did acknowledge that the graphing component was useful to monitor their child's progress.

In short, the families would have liked a shorter version of the workbook condensed into a shorter timeframe (which would have been possible to do if the families were not required to collect data for this study).

Section 5

Discussion

5.1 *Case One* – Mike (Pilot Study)

This Pilot Study provided the opportunity to discover if the procedures laid out in the High-*p* Workbook could easily be followed and implemented, to highlight any problems that may arise with future participants, and to also provide preliminary findings for this study. Experience gained from this study provided evidence that Mike's parents could follow the procedures as laid out in the workbook with minimal difficulty since they were implemented correctly with only minor additional information required. The only exception to this was the misunderstanding surrounding the fading sequence which was quickly rectified with modification to the recording sheets to make it clearer what procedures were required during the stages of the fading procedure.

However, being able to follow the procedures is one thing. Whether they produce any behaviour change is another. Overall the results from the three low-*p* requests do not provide particularly strong support for the procedure and the workbook. Nevertheless, the results achieved with Request One do provide some initial support for both the workbook and the ability of parents to successfully implement the high-*p* procedure within the home environment. Unfortunately the results of the remaining two requests were inconclusive.

The initial increase in the level of percentage compliance achieved with Request One tends to suggest that the introduction of the high-*p* sequence did influence compliance with this request. Although the results achieved during the high-*p* phase for Request One displayed some instability, on the whole a noticeably higher level of compliance was achieved. A similar but less marked increase in compliant behaviour was also achieved with Request Two.

With Request Two an initial steady increase in compliant behaviour was demonstrated with the introduction of the high-*p* sequence. These gains were marked by the noticeable decrease in percentage compliance shown on day 15, and then a gradual decline was

observed. During these days, Mike's mother reported that he was suffering from a virus and was off school during this time. She reported that he was noticeably less compliant than normal. Also, she noticed that Mike appeared to be loosing interest with the procedure as the initial novelty began to wear off. It is therefore possible that the decrease in compliant behaviour observed during the final days of the high-*p* request sequence with Request Two, and possibly some of the variability seen in the data for Request One over these same days may be attributed to these factors. Alternatively, it could be considered that the high-*p* requests used were not salient enough to produce behaviour change. This could be explained in terms of reinforcer quality as suggested by Mace et al. (1997). However, it would be expected that percentage compliance would be decreased with all three low-*p* requests if this was the case.

Unfortunately no increase in compliant behaviour was observed when the high-*p* sequence was introduced with Request Three. It is possible that this finding may be partially attributed to the same factors described above, but it is also possible that these results may also be confounded by the type of request chosen. Mike's parents selected a request "Stay close to me please Mike" which they described as problematic for them as he had a tendency to run away when visiting shopping centres, etc. The problem with using this type of request is that it is difficult to define compliance, as compliance required Mike to stay close to his mother for an undefined length of time. Ideally compliance with this request would mean that Mike would not shift from his mother's side, however such a requirement would be beyond the bounds of both practicality and ethics. On the other hand, if too short a time period was specified for Mike to remain with his mother the request would become rather pointless, as the short duration would result in the behaviour remaining problematic. To solve this problem a compromise was reached with Mike's mother, with compliance with this request being specified as staying next to her for a duration of two minutes. This requirement was introduced at the start of the fading sequence, however continued variability in this data means that further analysis would be unwarranted.

The results of the fading sequence phase of the programme provide some initial support for the ability of the fading sequence to successfully remove the high-*p* sequence without substantially reducing compliant behaviour. This therefore provides initial but weak

support for Ducharme and Worling's (1994) findings that the fading sequence can successfully remove the high-*p* sequence without substantial loss in compliant behaviour.

This finding was successfully shown with Request One but was unfortunately not replicated with Request Two and Three. Although there was a partial decrease in percentage compliance values across the fading sequence with Request One, overall the mean percentage compliance value remained substantially higher than the mean value achieved in baseline, as did the level of the data at the end of the sequence. The results from the fading sequence with Request Two are not as dramatic as those as Request One, but similar patterns in both data sets are evident. With both Request One and Two, percentage compliance at the beginning of the fading sequence is similar to that at the end of the high-*p* phase, which is followed by a small decrease in trend across the fading sequence. So despite the difference in the level of percentage compliance between the two requests, the fading sequence appears to have acted in a similar fashion with both sets of data. It is therefore possible that more conclusive results for the fading sequence phase of Request Two may have been achieved if the overall level of percentage compliance had been higher in the proceeding phase. Unfortunately this finding was not replicated with Request Three.

The data from the fading sequence may also have been confounded by the problem of Mike's loss of enthusiasm for the procedure towards the end of the high-*p* sequence. This may have been further exacerbated by the fading sequence being extended for an additional two days. It is highly likely that this may have influenced the results achieved across all three requests.

The one and four week follow-up data collected showed increasing trends for all three low-*p* requests. This is a surprising finding suggesting an increase in compliant behaviour with complete removal of the presentation of a high-*p* requests. Noticeably there were increases in mean percentage compliance for Request One and Three. Mean percentage compliance for Request Two remained at a level comparable to the fading sequence, but there was a noticeable increase in trend, with percentage compliance being substantially higher in week four relative to week one. It is unknown why these increases may have occurred, however they again may have been influenced by the possibility that Mike became bored and unresponsive to the procedure, which may have resulted in an increase in

noncompliant behaviour. Once the procedure was removed compliance may well have increased, relying on the salience of the verbal reinforcer to maintain compliance.

The possibility that a loss of interest with the procedure may occur is important to consider as it may have significant implications for the high-*p* procedure as a whole. It is obviously important that the high-*p* sequence is in place for a length of time that will promote a significant increase in compliance before the fading sequence commences. It is also important however to ensure that this length of time is not extended to a point where a saturation of high-*p*'s occurs, to the detriment of compliant behaviour. What is required is a compromise between length of time the high-*p* sequence is programmed for, and length of time required to reach effectiveness before the fading sequence is commenced. It was hoped that the multiple baseline design employed in this study may have provided some insight into the time frame required to reach effectiveness. Unfortunately with this case data instability has not allowed this to occur. It does however highlight that during future research the monitoring of percentage compliance during the high-*p* phase may be required to firstly ensure saturation does not begin to occur, and secondly that the high-*p* sequence is in place long enough to produce an acceptable increase in compliant behaviour before fading begins.

5.2 Case Two – Gale

The ability of the high-*p* sequence to increase compliant behaviour is clearly evident in the results obtained with Request One. With the introduction of the high-*p* sequence a steady increase in compliant behaviour occurred with this request, with percentage compliance remaining at a high level over the final three days of this phase. With the introduction of the fading sequence compliance was maintained at this same high level. During the follow-up phase where high-*p* requests were completely removed, little change in overall level of percentage compliance occurred. The results from the fading and follow-up phases suggest that the fading sequence successfully removed the high-*p* sequence, without losing the gains in compliant behaviour previously achieved.

Although there was an increase in mean percentage compliance with the introduction of the high-*p* sequence with Request Two, this increase is not readily discernible from Figure 3, and it is difficult to decisively say that this increase was due to the effects of the high-*p*

sequence. Given the gradual increase in trend that occurred across the baseline phase and the high-*p* phase, if the data from both phases were treated as one data set and the trend line re-plotted, then it would appear that the high-*p* sequence had no affect on the compliant behaviour and that the increase obtained was a result of some other variable. If a more stable baseline had been achieved before the high-*p* sequence was introduced, then any effects the high-*p* sequence had on percentage compliance may have been more easily discernible. However, as the length of the experimental phases were pre-programmed with the use of the workbook this problem could not have been avoided. Given a more flexible experimental design, with greater experimenter control, then it may have been easier to extend the baseline phase and possibly achieve stability.

Assuming that the increase in trend that occurred across the high-*p* phase was a result of the high-*p* sequence, it is not clear why an increase in trend occurred during baseline. It is possible that compliant responding generalised from Request One to Request Two with the introduction of the high-*p* sequence, as the four final data points of the baseline phase which overlap the high-*p* phase in Request One stabilised at a higher level relative to those earlier in this phase. However, as this same generalisation was not replicated with Request Three, this possibility remains tentative. Another alternative (which unfortunately can not be isolated from the data) is the possibility that Request One and Request Two are not in fact mutually exclusive requests, as the use of Request Two ("Stay on the toilet please Gale") is dependent on the use of Request One ("Go to the toilet please Gale.). It is therefore possible that the increase in trend that occurred in the baseline phase of Request Two was influenced by an increase in the probability that Gale went to the toilet. This in itself is a problem with using a multiple-baseline across-behaviours design, as there is a lack of independence between the behaviours. In more practical terms however, this generalisation can be seen as beneficial, as it may have increased compliance with the second request.

It is interesting that an increase in the mean percentage compliance occurred when the fading sequence was introduced with Request Two. As the high-*p* sequence is still being employed during the initial stage of the fading sequence but with one less high-*p* request, it is possible that this increase may still be being influenced by the high-*p* sequence thereby increasing compliance. Toward the end of this phase though, compliance was still being maintained at the same high level despite the fact that only one high-*p* request was being

used with increased time between prompts. It is therefore not known why the increase in compliant responding occurred during this phase. The one, three and five week follow-up data that was collected demonstrated that no loss in compliant behaviour occurred with the complete removal of the high-*p* sequence. In fact, an increase in mean percentage compliance occurred across this phase. Again, it is not known why this occurred. The most sensible explanations are those proposed above, i.e., that compliance generalised from Request One two Request Two, or the dependence of Request Two on Request One influenced the level of percentage compliance achieved.

Although not as striking as with Request One, the results of Request Three also provide support for the findings of this study. When the high-*p* sequence was introduced following baseline, a large change in the level of percentage compliance occurred. The resulting high level of compliance was maintained across this phase despite the occurrence of a slightly decreasing trend. Results from the fading and follow-up phases also provide support for the fading sequence, as little change in the overall level of percentage compliance occurred throughout these phases, and was maintained at five weeks follow-up.

During the baseline phase of Request Three a high degree of variability occurred which can be partly attributed to fewer requests being issued during this phase. During this phase a slow gradual increase in percentage compliance similar to Request Two occurred. Again, if a more stable baseline was achieved before the intervention was employed, this problem may have been avoided. It is possible that this increase could be attributed to generalisation of compliant responding, however, the instability of the data during baseline makes this difficult to establish.

Results from this case have demonstrated the ability of the high-*p* sequence to increase compliant behaviour. Also, the addition of the fading sequence provided maintenance of these increases up to five weeks follow-up for all three requests. These result provide support for the fading sequence as used by Ducharme and Worling (1994). As well as being successful in terms of providing support for the high-*p* and fading sequences, this study also successfully benefited the participating family. This was through increasing and maintaining compliance with what were very important, problematic and stressful requests for the family, namely going to, and staying on the toilet.

Given that increases in trend occurred across baseline with both Request Two and Three that are not easily accounted for by the data, other possible explanations must be considered. One possibility that must be seriously considered is that the workbook, or more importantly its contents, may be acting as a separate intervention. When the workbook was developed several requirements were incorporated into the experimental design, each of which had previously been shown to influence compliant behaviour. These were ensuring that requests are made the same way each time, that requests are phrased in a positive way with the use of appropriate language, that the child's attention is gained before a request is made, that the word "please" was used, and positive reinforcement for compliance occurred in the form of descriptive praise. As a result, it is possible that these factors may have influenced compliance with requests before the high-*p* sequence was employed, and that these factors may account for the slow gradual increase in trend that was observed during the baseline phases of Request Two and Three. To explore this possibility a comparison could be made by collecting data before the workbook was introduced. Unfortunately a post-hoc analysis such as this cannot be performed.

5.3 Case Three – Lisa

The results from this case are somewhat different from those expected. It would appear that the high-*p* sequence had little or no effect on increasing percentage compliance. Rather, the introduction of the procedures detailed in the workbook appears to have produced a positive treatment outcome during the baseline phase, before the high-*p* sequence was introduced. This is similar to the results of Case Two, where a gradual increase in percentage compliance across the baseline phase was also observed.

The results from Request One suggest that during the monitoring phase there was a steady decrease in percentage compliance. During the baseline phase this reversed, and a marked increase in compliance occurred. Why percentage compliance should suddenly increase is unknown. One possibility is that the introduction of the procedures in the high-*p* workbook influenced percentage compliance during the baseline phase. However, it is unclear why this same effect did not occur earlier during the monitoring stage as these procedures should have already been in place. What cannot be determined is if the procedures detailed in the workbook were used at the beginning of the monitoring phase.

The possibility therefore remains, albeit tentatively, that the increases in compliance found during the baseline phase could be attributed to the workbook.

When the high-*p* sequence was introduced, a drop in percentage compliance occurred which then steeply increased again, so the possibility exists that the high-*p* sequence did influence compliance to some extent. However, given the sharp increase in compliance that occurred earlier, it is difficult to conclude a) whether the increase in percentage compliance demonstrated during the high-*p* phase is a result of the high-*p* sequence, b) has been influenced by the presentation of the workbook, or c) is a combination of both factors.

Results similar to those of Request One also occurred Request Two. Percentage compliance was maintained at a low level during the monitoring phase, but then steadily increased with the introduction of the workbook. It would appear that percentage compliance during this phase was disrupted when the high-*p* sequence was introduced to Request One. Why this has happened is unclear. When the high-*p* sequence was introduced with Request Two, overall percentage compliance remained steady across the phase at a level the same as the data at the end of the previous phase. As a result it appears that with this particular request, the high-*p* sequence had no effect on percentage compliance. However it did appear to stabilise compliance somewhat, therefore may still have had some impact on compliance.

Although not as dramatic as the other two requests, the results from Request Three show that percentage compliance decreased during the monitoring phase and then increase during the baseline phase. This is despite the variability that occurred across the baseline phase. Interestingly, generalisation of compliance may have occurred on Days 6,7 and 8 when the high-*p* sequence was introduced with Request One, but was not replicated with Request Two. When the high-*p* sequence was introduced, no change in the level of percentage compliance relative to the end of baseline phase occurred. However it does appear that the high-*p* sequence again produced some stability in the data during this phase.

With respect to the fading sequence phase, little change in the level of data relative to the high-*p* phase occurred with all three low-*p* requests. In all cases mean percentage

compliance increased across the fading sequence. Similar levels of percentage compliance occurred during the follow-up phase with all three low-*p* requests. Two alternative conclusions can then be drawn from these results. Firstly, the fading sequence successfully removed the high-*p* sequence without any decrease in the gains of percentage compliance achieved, which is demonstrated by the high level of compliance maintained during follow-up. Or alternatively, the fading sequence was successful in removing the high-*p* sequence, but as the high-*p* sequence itself did not appear to have produced any increase in compliance behaviour, its removal would not have influenced the results anyway! If so, then compliance may have been hindered through the use of the high-*p* sequence, which may account for why mean percentage compliance increased during the fading sequence. Obviously the alternative that is chosen depends on whether it is concluded that the high-*p* sequence successfully increased compliant behaviour.

Overall, the results from this case suggest that the high-*p* sequence did not significantly increase compliant behaviour, however it did appear to produce some stability in the data and may have influenced the results achieved during the fading sequence and follow-up phases. What is evident from the results of this case is that some extraneous variable or variables influenced percentage compliance between the monitoring and high-*p* phases. Although it is unknown exactly what these may be, the most likely possibility is that the introduction of the procedures detailed in the high-*p* workbook significantly increased compliant behaviour. It is possible then that the introduction of the workbook could be considered a separate intervention as suggested in Case Two. This hypothesis does not, however, explain why increases in percentage compliance failed to occur during the monitoring phase. Having said that though, it is important to consider that the experimental design employed here was to test the high-*p* procedure and fading sequence, not whether the introduction of the workbook has the potential to increase compliant behaviour by itself. Ideally, future research could compare two versions of the workbook, one with, and one without the high-*p* sequence and fading procedure to test whether the introduction of the workbook without these procedures is sufficient to increase complaint behaviour.

5.4 General Discussion and Conclusions

This study attempted to replicate and extend the findings of Ducharme and Worling (1994) by incorporating these procedures into a workbook designed to allow the participant families to work through them with little help from the researcher. A single-case multiple-baseline across behaviours design, followed by stimulus fading and follow-up components was used to test the high-*p* and the fading procedures, as well as assessing if families could perform these procedures using the workbook format. The procedure was replicated across three cases. Results from this study provide some support for the findings of Ducharme and Worling, but also raise questions surrounding aspects of both the high-*p* and workbook procedures, and their application.

Three separate replications (case studies) were conducted using the high-*p* and stimulus fading procedures in the workbook format. The first case study was designed as a pilot study to test whether parents could follow the procedures laid out in the workbook. This finding was confirmed. Results obtained with one of the three low-*p* requests from this case provided some initial support for the ability of the high-*p* procedure to increase compliance within the home environment. Results from the fading and follow-up phases also suggest that maintenance of these compliance gains is possible, providing support for the fading sequence as used by Ducharme and Worling (1994). Unfortunately these results were not replicated with the remaining two low-*p* requests.

The ability of the high-*p* sequence to increase compliant behaviour was more conclusively demonstrated with the results of Case Two. With two of the three low-*p* requests the high-*p* sequence clearly produced increases in compliant behaviour. These increases were maintained at the same high levels throughout the fading sequence and at five weeks follow-up. With the third low-*p* request, the results were inconclusive.

The results from Case Three did not provide clear support for either the ability of the high-*p* sequence to increase compliant behaviour, or for the fading sequence. Rather these results tentatively suggest the possibility that the introduction of the information contained in the high-*p* workbook may have acted as a separate intervention increasing compliance before the high-*p* sequence was introduced (discussed below).

Combined, the results of these three cases provide additional, but not conclusive support for the findings of Ducharme and Worling (1994). The high-probability sequence produced substantial increases in compliant behaviour with some requests, and less substantial increases with others[11]. The increases in compliant behaviour that did occur as a result of the high-*p* sequence were also maintained at the same high levels throughout the follow-up phase with the use of the fading sequence. Overall, the results from the fading and follow-up sequences also provide support for the fading sequence's ability to produce maintenance of any treatment gains. They therefore reconfirm Ducharme and Worling's (1994) hypothesis that stimulus control of compliance is able to be transferred from the high-*p* to the low-*p* request within the home environment.

Producing maintenance of any treatment gains is an important aspect to be considered in any intervention, be it home-based or otherwise. This is to ensure that any desired behaviour change will be ongoing, and the benefits the child and the family receive will continue to occur in the absence of the intervention. One of the criticisms of early research with the high-*p* procedure was the reversibility of gains in compliance when the high-*p* sequence was withdrawn. To avoid this problem, the use of generalisation procedures to ensure that these gains remained were investigated by Davis and her colleagues within a school environment (Davis et al., 1994; Davis et al., 1992; Davis et al., 1998).

More recently Ardoin et al. (1999) successfully demonstrated that a similar but less complicated fading sequence procedure to that of Ducharme and Worling's could be used in a classroom setting to produce maintenance of treatment gains. To date, Ducharme and Worling's study is the only one published which has explored this area within the home environment. This current study adds to the previous research by reconfirming that it is possible to maintain increases in compliant behaviour when the high-*p* sequence is withdrawn. This work could be further developed by establishing if the briefer method as used by Ardoin et al. is still effective in a home environment.

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[11] However, it is important to keep in mind that although these increases are less substantial in terms of research outcomes they can nevertheless still be considered successful in terms of a treatment outcome, as they may still beneficial to the child and family concerned. Given the very nature of developmental disabilities, even a very small increase in compliance (or any other adaptive behaviour for that matter) may be a major breakthrough for that particular child, and of huge benefit to them and their family. It is important to relate any gains back to the child and assess them in terms of their current level of functioning, which is sometimes difficult for research to do.

The results from this study also demonstrate that the parents of all three children could adequately manage the high-*p* sequence and stimulus fading procedures themselves. Prior to this study, both Ducharme and Worling, and Rortvedt and Miltenberger (1994) demonstrated that parents could successfully manage the high-*p* procedure within the home, however they were still under the direction of a researcher present during experimental sessions. In a recent home-based study by Smith and Lerman (1999) parents were taught to use the high-*p* sequence as well as a guided compliance procedure through direct as well as written instruction. Parents were then left to perform the procedures without further guidance. Part of Smith and Lerman's assessment protocol was to establish if parents could correctly implement and manage these procedures, which their results suggest parents could do. The results from this current study reconfirm that parents can successfully manage the high-*p* procedure, as well as the stimulus fading procedure, without ongoing instruction from the researcher. As a result, numerous possibilities are opened up surrounding how the high-*p* and stimulus fading procedures are delivered to parents for use in the home. For example, as an intervention used occasionally when compliance is desired or required, or as part of a broader 'parenting programme'.

An interesting finding of this study was that increases in compliant behaviour may have occurred in some instances as a result of the introduction to additional procedures detailed in the high-*p* workbook (as possibly seen in the results of Case Two, and possibly also with Case Three). These results suggest the possibility that the high-*p* workbook may well have constituted a separate intervention which increased compliant behaviour (especially if the data from the monitoring phase of Case Three were not presented). If it was found that increases in compliant behaviour occurred across the monitoring phase of Case Three, then this hypothesis would have strong support. Unfortunately this did not occur. What cannot be readily explained is why compliance should begin to dramatically increase during the baseline stage with Case Three without any major change in experimental conditions. Therefore, the possibility that the high-*p* workbook may still have positively influenced compliant behaviour cannot be overlooked.

Consistent with much prior research, it is suggested that ideas such as making clear concise requests, etc, continue to be incorporated and combined with behavioural interventions such as the high-*p* procedure. This is because it may be more important in practical terms

to ensure that treatment gains occur, regardless of whether they result directly from the intervention, or are a result of associated variables. In relation to this research it confirms that there are many factors that may influence compliant behaviour in the home, not all of which can be anticipated and controlled for in an experimental intervention.

Overall the majority of parents involved in the study reported that they were satisfied with the intervention they received, and that they found it a positive way to manage their child's noncompliant behaviour. This is an important point when considering the ongoing development of the high-*p* procedure in a workbook format. This in conjunction with the empirical validation of the procedure within a home setting also makes the high-*p* intervention another proven, effective tool which parents can choose from when considering ways to best manage their child's noncompliant behaviour, and the needs of their family.

Despite the fact that parents found the procedure positive, comments were made that the workbook was to complicated and too long. It was considered during the development of the workbook that parents may have been put off by the size of the workbook, but this was considered necessary to make it comprehensive enough to accurately replicate Ducharme and Worling's (1994) study. If the workbook was being used for anything but research purposes, then it could be easily decreased in size. As mentioned above future research could examine ways of decreasing the size of the workbook. However, rather than simply decreasing the workbook to contain information about the high-*p* procedure and fading sequence, it is also important to include the additional information contained in it as this may also have contributed to increases in compliant behaviour. This may increase the overall effectiveness of the high-*p* procedure and fading sequence, and may also ensure the workbook remains a useful resource which parents can use to double check, get ideas and refer back to in the future.

As stated above, the results from this study only provide limited support for the findings of Ducharme and Worling (1994), as several instances occurred where the high-*p* procedure failed to produce any substantial increase in compliant behaviour. Several possibilities have been highlighted in each separate case study as to why this may have occurred. It cannot, however, be overlooked that despite the similarity between the procedures used by Ducharme and Worling and this study, the modality in which they were presented were

completely different. This difference had a very specific purpose, to see if parents could effectively manage the procedures by themselves, but as a result left many variables between this study and Ducharme and Worling's uncontrolled for. For instance, in Ducharme and Worling's study a researcher was present in the family home during all experimental sessions, where in this study one was not. This in itself may be one variable different between the two studies that may have been sufficient to influence the results achieved. As such, it is difficult to draw conclusions as to whether the high-*p* and stimulus fading procedures themselves were ineffective, or the manner in which they were presented.

It is also possible that the type of request issued may influence whether the high-*p* procedure is effective. In this instance, it may be that the type of request that was selected by the parent was not suitable to be used with the high-*p* request. Although some research has examined factors that may influence the effectiveness of the high-*p* procedure when used to treat other behaviour problems in conjunction with noncompliance (Zarcone et al., 1994; Zarcone et al., 1993), no work has been conducted to explore the limitations of what requests the high-*p* procedure is or is not effective with. With respect to the findings of this study, this obviously constitutes an important area of future research. This problem may also have been related to the workbook itself with the inclusion of the Probability Questionnaire (incorporated into the workbook as it constituted part of Ducharme and Worling's, 1994 original study). It is possible that many of the requests in this list may not be suitable for use with the high-*p* procedure and should possibly be modified in light of any research conducted as suggested above.

Another possibility as to why the high-*p* procedure did not work with some requests is that high-*p* procedure did not influence the antecedent and reinforcer conditions that may be maintaining the behaviour. As such, it may have been beneficial to perform a functional analysis before the high-*p* procedure was used. It was suggested above that as Ducharme and Worling (1994) produced sizeable gains in compliant behaviour without first performing a functional analysis of the noncompliant behaviour, such an analysis may not be necessary before the high-*p* procedure is used. It was hoped that the results of this study may have shed some light on this problem. However, given the inconclusive results of this study, it may have been appropriate to perform a functional analysis to understand what conditions were maintaining the behaviours. This may have ensured that the high-*p*

procedure was not utilised in an inappropriate way, or with an inappropriate behaviour and produced a better treatment outcome. This, however, suggests that it is already known under what conditions or situations the high-*p* procedure is best used, which as discussed above is not known, again stressing the need for further research to be conducted in this area.

A further limitation and methodological problem highlighted by this research is the possibility that a 'saturation' of high-*p* requests occurred, reducing compliance in Case One. This is a problem that can be attributed to the experimental design of the workbook given that the high-*p* sequence was used with three low-*p* requests at one time resulting in a high frequency of high-*p* requests issued. To avoid this occurring again in the future, the high-*p* and fading sequence procedure may need to be further time constrained to reduce the number of high-*p* requests issued. Alternatively, the number of low-*p* requests with which the high-*p* sequence is used at any given time may have to be reduced. With respect to reducing the time frame of the procedure, the problem then arises as to what length of time the high-*p* sequence needs to be used with a low-*p* request before compliance gains occur. The best solution to this problem would be continual close monitoring of compliance to assess for a possible ceiling effect, or any decreases in compliance. However this may not be practical in a home-based setting, as replies from the consumer satisfaction questionnaire suggest that the compliance monitoring procedures were too time consuming. The problem then arises as to how to easily monitor compliance to ensure that saturation of high-*p* requests does not occur, as well as respond to consumer requests to shorten the workbook and procedures. Alternatively, if reinforcer quality was increased as suggested by Mace et al. (1997) then saturation may not occur as readily, and may also increase the probability that compliance with low-*p* may occur. Ways of increasing the quality of high-*p* requests should therefore be explored to increase the likelihood of a positive treatment outcome.

Further methodological problems that arose with this research concerns the recruitment of participants. Results from this study may have been more conclusive had a greater number of cases been completed. Despite every attempt to recruit families to participate in the programme recruitment was difficult. Several difficulties were experienced during the recruiting process that contributed to this problem, all of which were outside of the researcher's control. If similar research is conducted in the future careful attention to the

recruitment process would need to be made to ensure that adequate numbers of participants were available.

In terms of broader theoretical implications, this research was not designed to directly explore any specific theory of the high-*p* procedure. Anecdotal evidence gained through discussions of the procedure with the parents concerned suggests that the participating children enjoyed complying with high-*p* requests. This finding is not new, nor surprising, given the close personal nature of most of these requests. It may therefore be possible that the high-*p* procedure may be inducing a positive mood which influences compliant behaviour as suggested by Meyer and Evans (1989). Given the controversy that surrounds the momentum account for the high-*p* procedure, a comparison between Mayer and Evan's theory and Mace's momentum account is well worth considering as an area of possible research[12].

In conclusion, the results of this study have provided additional supporting evidence for the high-*p* procedure (developed by Mace et al., 1988), and the stimulus fading procedure developed by Ducharme and Worling (1994). It has further extended this work by demonstrating the flexibility of the two procedures by establishing that parents can adequately manage these procedures using a written workbook. As such the findings of this study open up possibilities of how the high-*p* procedure can be employed within the home environment to manage noncompliant behaviour and in doing so potentially create greater learning opportunities for the child concerned. This study has again demonstrated the high-*p* procedure as a nonaversive and minimally intrusive intervention which parents readily accepted and described as a worthwhile intervention.

This research has also suggested several problems with the procedures which constitute areas of future research. Most importantly this study has highlighted the need for the continued development of our knowledge surrounding the use of the high-*p* procedure, especially in the establishment and development of the factors, conditions and requests with which the high-*p* procedure is best employed. The findings of this study have shown that the high-*p* procedure is not a 'cure all' intervention, but has provided parents with another empirically validated option from which to chose when deciding how best to manage problematic noncompliant behaviour.

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[12] See literature review above (p. 35) for an example of how this could be done.

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Appendix A

Information Sheet and Consent Form

University of Canterbury
Department of Psychology

INFORMATION SHEET

You are invited to participate in a research project which aims to help parents improve the compliant behaviour of their developmentally-disabled child. The title of the research project is *Development of a home-based, parent-managed procedure to improve compliance in noncompliant children with a developmental-disability.*

This project intends to find ways to improve a technique call a 'High Probability Request Sequence', so it can be easily used by parents of developmentally-disabled children to treat problem noncompliant behaviour at home. The technique uses existing compliant behaviour to increase compliance to specific problem requests identified by the parent. It is a nonaversive and non-intrusive procedure. The goal of the project is to produce a booklet which can be given to parents to help them treat problem noncompliant behaviour, without them needing a lot of therapist contact.

For the study, one parent and their child (aged between 5 and 11 years) will need to be involved. In addition a second adult (husband, wife, partner, relative, neighbour, friend, etc) will also be involved to a lesser extent. All the information and materials required to complete the study will be provided in a workbook. In addition, the researcher will be available to help with any difficulties participants may have in completing the study.

Firstly you will need to fill out a questionnaire to help pinpoint ten specific requests to which your child will normally comply, and ten specific requests which usually result in noncompliance. You will then be required to record your child's compliance to these requests for five days. From there three problematic noncompliant requests will be selected (these will be called low-*p* requests), as well as five requests which result in high levels of compliance (high-*p* requests) to be used in the study. The low-*p* requests will be monitored for a further five days before the treatment begins. During these stages, and from time to time, the researcher will need to come into your home to help make sure compliance to requests is being monitored correctly.

The treatment phase of the study will use the High Probability Request Sequence. This is really rather simple to perform, but before it is used you will be required to spend a short amount of time being trained by the researcher to ensure it is performed correctly. The High Probability Request Sequence is performed by asking your child

three high-*p* requests followed closely by one of the three low-*p* requests, and then observing whether compliance to the low-*p* request occurs. Other research has found this technique to be highly effective in increasing compliant behaviour. Each of the three low-*p* requests will be systematically examined in this way.

After approximately 17 days you will then be asked to gradually fade out the high-*p* requests over a 10 day period, until you will be presenting only the low-*p* requests to your child. You will then be asked to monitor your child's compliant behaviour for two days, 1, 3 and 5 weeks after the fading sequence ends. This is to assess how well the procedure and fading sequence has worked.

As a follow-up to this investigation, you will also be asked to complete a short consumer satisfaction questionnaire to report how you think the treatment programme can be improved, and what your experience using it was like.

In participating in the procedures of this study there are no foreseen risks to the safety and well being of your family.

The results of this project may be published, but you are assured of complete confidentiality of any personal information gathered in this study: the identity of the participants will remain anonymous. To ensure anonymity and confidentiality the names, addresses and other identifying information will be known only to the researcher, and if necessary his supervisor(s). If the results of this study are published, pseudonyms will be used in place of actual names where necessary.

The project is being carried out by Stephen Humm, who can be contacted at . He will be pleased to discuss any concerns you may have about participation in this project.

This project has been reviewed by the University of Canterbury Human Ethics Committee.

CONSENT FORM

Development of a home-based, parent-managed procedure to improve compliance in noncompliant children with a developmental-disability.

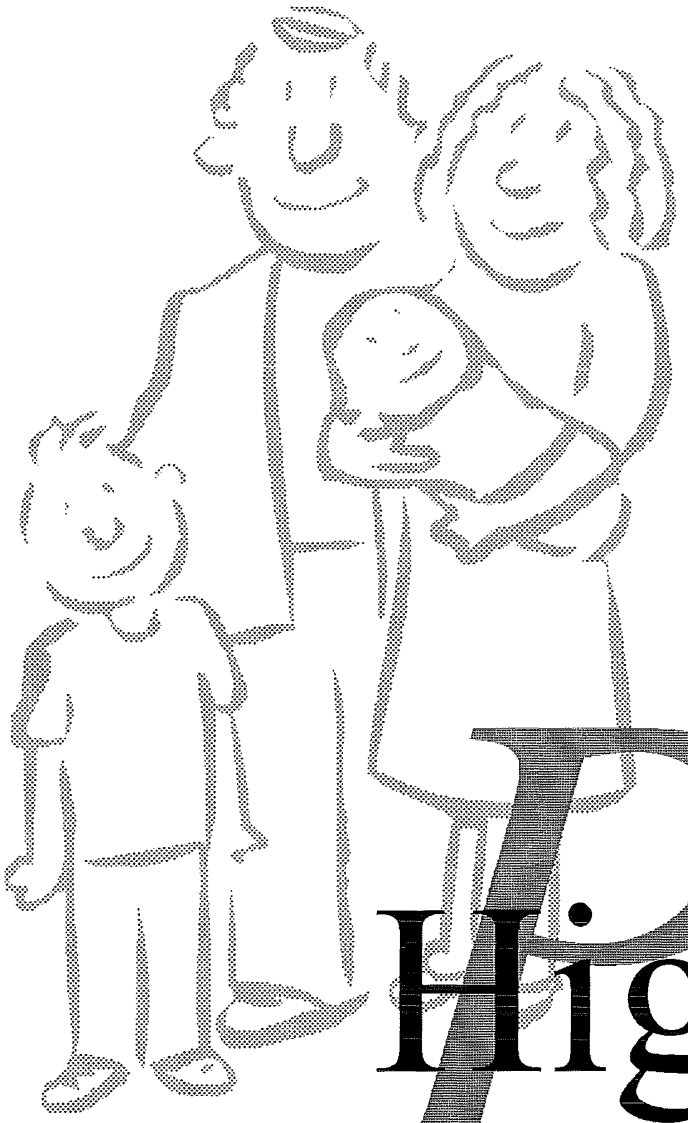
I have read and understood the description of the above-named project. On this basis I agree to participate in the project, and I give full consent for my child to also participate in the project. I also consent to the publication of the results of the project with the understanding that anonymity will be preserved. I understand also that I may at any time withdraw from the project, including withdrawal of any information I have provided.

Signed _____ Date _____

_____ _____

Appendix B

High-*p* Workbook



HiP

WORKBOOK

Stephen Humm

Researcher's Phone No:

Parent's Name: _____

Child's Name: _____

Introduction

Having your child comply with your instructions is an important part parenting, and I'm sure you don't need to be told how difficult it can be for you when your child does not comply with your requests. This project is designed to teach you how to increase your child's compliance to every-day requests you are having problems with.

This project uses a procedure called a high probability request sequence (or just a high-*p* sequence) which has been shown to increase compliant behaviour in people with developmental disabilities.[1]

The high-*p* procedure is actually rather simple to perform. It starts by issuing a set of three requests to which the noncompliant person will normally comply e.g. "give me a hug" or "give me five" (these are called high probability or high-*p* requests; high probability - because they are requests they will reliably perform). These requests are spaced about ten seconds apart. About 5 seconds later, the problem request with which the person does not usually comply (called the low probability or low-*p* request) is made. As a result of giving the sequence of high-*p* requests, it has been found that compliance to the low-*p* requests greatly increased.

Many experiments have already shown that compliant behaviour will increase when the high-*p* procedure is used with children and adults who have developmental disabilities. Other research has suggested that by gradually removing (or 'fading out') the high-*p* sequence, compliant behaviour will continue long after the procedure is stopped. The aim of this project is to confirm that this is the case. The results achieved will then be used to further develop the procedure so parents can manage it themselves in a workbook similar to this one.

This project has been designed in a workbook format that you will work through, for the most part, on your own. The workbook is broken into separate sections which you will work through for each part of the project. Each section has been designed with detailed, easy to follow instructions. The workbook will guide you along the way and explain why you are doing what you are. If at any time you are unsure about what you should be doing, how to go about something, or what to do next then please contact the researcher.

The sections in the workbook are

[1] It important to note that the high-*p* sequence is not a technique designed to teach new skills and should not be used to do so.

1. **Choosing Low-*p* and High-*p* Requests** - initial selection of 10 high-*p* and 10 low-*p* requests.
2. **Keeping Track of Low-*p* and High-*p* Requests** - monitoring or recording levels of compliance to the high-*p* and low-*p* requests. This is done to select the requests which will be used in the project.
3. **Baseline and Graphing** - in this section you will form a baseline and make a graph to measure changes in compliance to the three low-*p* requests selected.
4. **Applying the High-*p* Sequence** - the section where the high-*p* procedure will be used to increase compliance to the low-*p* requests.
5. **Fading the High-*p* Requests** - introducing a fading sequence to gradually remove the high-*p* request sequence.
6. **Follow-up** - to see how well compliance lasts over time.

Training in Your Home

Before you start the programme it will be necessary to conduct a short training session with you in your home. This is to familiarise you with the workbook and its contents. It is to also teach you how to issue the requests and give *descriptive praise* to your child. This is done to ensure that the same procedures are learned by all those participating in the project. It will also ensure that compliance will be monitored correctly, and will serve as an excellent time to answer any queries you may have about the project. The researcher will contact you to arrange a suitable time.

Agreement Checks

During the project a second person is needed to independently observe if compliance occurred when a request was made. This check is called an agreement check. The second person could be a partner, friend, neighbour or relative, etc. Agreement checks are performed to ensure compliance is reliably recorded. You are asked to perform an agreement check at least once a day.

Second Training Session

It will also be necessary to conduct a second training session between stage 2 and 3 of the project to make sure the high-*p* sequence will be used correctly.

Visits

The researcher will also need to come to your home on two or three separate occasions to observe a specific instances of a request being made. This is just to ensure consistency within the project. It will only take a few minutes and will be arranged at a time to suit you.

Thank you for your participation, which we know is a big step. We hope that you will enjoy the procedure and will gain satisfaction in seeing the changes in your child. If you have any queries please feel free to phone the researcher on .

Thank you once again.

Section One

Choosing Low-*p* and High-*p* requests

Overview

This first section is designed to help you select ten specific behaviours and requests with which your child has difficulty complying. These will be called low-*p* requests. It will also help you to choose ten specific requests to which your child usually responds, these are high-*p* requests. This section is important as it will identify the problem requests you will want to target, and also the requests that will be used to increase compliance. Remember, that your child must already be able to perform the requests you ask them. That is, they must have been able to complete the task at least once in the past. Do not try to use the high-*p* technique to teach your child to perform a new task.

Procedure

To select the low-*p* and high-*p* requests you will use in this project you will need to complete the questionnaire on pages 9 -14. This lists 124 common requests used in the home in a variety of settings. In addition there is space for you at the end of the questionnaire to add any other requests not listed.

The questionnaire asks you to indicate whether your child is likely to comply with the request if it is **stated only once** (though not necessarily using the same wording given). You are given four choices - *almost always* (76-100% compliance), *usually* (51-75%), *occasionally* (25-50%), or *rarely* (0-24%). You are also asked whether this request is important to you.

If your child cannot perform any of the requests listed then just cross them out.

Your first task will be to work through the questionnaire placing a tick in the appropriate box. As you go through the questionnaire ask yourself this question -

If I asked my child to do (request) would they start to comply within 10 seconds of my asking, *and* complete the request within a reasonable time?

You might want to know what a 'reasonable time' is to complete a request. This is going to depend on what you are asking your child to do. The decision is up to you, but don't expect to much from your child. A good rule of thumb to use is to decide if

your child **hasn't** complied with your request, or if you need to ask your child to hurry up or finish up to complete the task. Also, compliance **hasn't** occurred if your child becomes distracted halfway through their task.

You may feel that you do not need to go through the questionnaire to decide what noncompliant behaviours you want to change in your child. However, you are asked to complete the questionnaire anyway, as it may very well help identify problem areas you may not think of straight away.

Please complete the questionnaire now.

COMPLIANCE PROBABILITY QUESTIONNAIRE*

Listed below are a series of requests you may make to your child in a given day. Please indicate the likelihood that your child will comply to this request if the request is stated only once. Tick (√) the appropriate box beside each request. If you have a request which is not listed in a particular category, please write it in at the bottom of that section and indicate it's probability. There is also space at the end of the questionnaire for any other requests you might think of. If your child cannot perform any of the requests listed, then please cross them out.

	Almost always 76-100%	Usually 51-75%	Occasionally 25-50%	Rarely 0-24%	This request is important to me (√)
DRESSING					
1. Get your (item of clothing).					
2. Get your shoes.					
3. Put on your socks.					
4. Put on your (item of clothing).					
5. Put on your shoes.					
6. Do up your buttons.					
7. Tie or fasten your shoes.					
8. Do up your zipper.					
9. Hang up your jacket/coat.					
10. Take off your (item of clothing).					
11. Take off your shoes.					
SELF-CARE					
12. Wash your hands.					
13. Brush your hair.					
14. Wash your face.					
15. Turn on the tap.					
16. Turn off the tap.					
17. Flush the toilet.					
18. Use the soap.					
19. Dry your hands.					

	Almost always 76-100%	Usually 51-75%	Occasionally 25-50%	Rarely 0-25%	This request is important to me (√)
SELF CARE (cont'd)					
20. Dry your face.					
21. Go to the toilet / bathroom.					
22. Close the door.					
23. Pull your pants down.					
24. Wet your toothbrush					
25. Put toothpaste on the toothbrush					
26. Brush your teeth.					
27. Spit the toothpaste into the basin.					
28. Rinse your mouth.					
29. Put the cap on the toothpaste.					
30. Put your toothbrush away.					
31. Put the toothpaste away.					
PLAY					
32. Go and get your (play item).					
33. Do the puzzle.					
34. Put this piece in the puzzle.					
35. Throw me the ball.					
36. Catch the ball.					
37. Play some music for me (instruments).					
38. Sing to the music.					
39. Dance to the music.					
40. Jump up and down.					
41. Ride your (individual item).					
42. Draw me a picture.					
43. Colour the picture.					
44. Turn on the music.					
45. Turn on the T.V. / computer.					
46. Turn off the T.V. / computer.					
47. Turn up/down the volume.					
48. Put your hands in the air.					

	Almost always 76-100%	Usually 51-75%	Occasionally 25-50%	Rarely 0-25%	This request is important to me (√)
PLAY (cont'd)					
49. Stamp your feet.					
50. Wave your arms.					
51. Stack the blocks.					
52. Push the (toy).					
53. Hug the doll/stuffed toy.					
54. Choose a toy/activity.					
55. Blow bubbles.					
ACADEMIC					
56. Trace the _____.					
57. Draw a _____.					
58. Draw a line.					
59. Cut out the picture.					
60. Point to the _____.					
61. Find me a picture of a _____.					
62. Print your name.					
63. Tell me your name.					
64. Show me the _____.					
65. Give me the _____.					
66. Tell me where your _____ is.					
67. Count for me.					
68. Count the _____.					
69. Open the book.					
70. Read this to me.					
71. Turn the page.					
72. Bring me the _____.					
73. Touch your _____.					
74. Touch my _____.					
75. Place the sticker on the sheet.					
76.Pick up the _____.					
77.Put the (item) in the _____.					

	Almost always 76-100%	Usually 51-75%	Occasionally 25-50%	Rarely 0-25%	This request is important to me (√)
SOCIAL					
78. Give me a hug.					
79. Give me five.					
80. Shake my hand.					
81. Clap your hands.					
82. Hold my hand.					
83. Come and sit beside me.					
84. Smile.					
85. Talk on the phone.					
MEALTIME					
86. Set the table.					
87. Put the _____ on the table.					
88. Come to the table.					
89. Eat your (particular food item).					
90. Pass the (particular food item).					
91. Use your (particular utensil).					
92. Sit on your chair.					
93. Drink your (particular drink).					
94. Pour yourself a drink of _____.					
95. Wipe your mouth.					
96. Go get a (particular treat).					
CLEAN UP					
97. Put away your toys.					
98. Put away your book.					
99. Pick up your (particular object).					
100.Put your (item) in the sink.					

	Almost always 76-100%	Usually 51-75%	Occasionally 25-50%	Rarely 0-25%	This request is important to me (√)
CLEAN UP (cont'd)					
101.Wash the (particular item).					
102.Dry the (particular item).					
103.Clear the table.					
104.Fold the (item).					
105.Put this in the rubbish.					
TRANSPORTATION					
107.Get into the car/bus.					
108.Put on your seatbelt.					
109.Stay in your seat.					
110.Wind up/down the window.					
111.Get out of the car/bus.					
GENERAL					
112.Follow me.					
113.Look at me.					
114.Come here.					
115.Hold this.					
116.Sit down.					
117.Go to the (particular place).					
118.Turn off the music.					
119.Push your chair in.					
120.Bring me the (non-play item).					
121.Tell me your address.					
122.Tell me your telephone number.					
123.Come inside.					
124.Bring me your chair.					

	Almost always 76-100%	Usually 51-75%	Occasionally 25-50%	Rarely 0-25%	This request is important to me (√)
OTHER					
125.					
126.					
127.					
128.					
129.					
130.					
131.					
132.					
133.					
134.					
135.					
136.					
137.					
138.					
139.					
140.					
141.					
142.					
143.					
144.					
145.					
146.					
147.					
148.					
149.					
150.					

* This questionnaire has kindly been provided by Dr J. Ducharme, Hamilton Health Sciences Corporation, Ontario, Canada.

Now that you have filled in the questionnaire the next task will be to choose 10 low-*p* requests and 10 high-*p* requests which you will monitor in the next stage of the project. You will also need to make some decisions regarding which requests you want to choose.

Low-*p* Requests

Firstly you will need to consider the low-*p* requests. You will need to look at the requests that you identified in the 'rarely' (0-24% of occasions) column of the questionnaire. It is from these that the low-*p* requests used in the project will be selected. By examining the requests you ticked in this column it will hopefully become clear which 10 you want to have compliance improved. If it is not clear then it may help to check which of these requests you also identified as being important to you.

If you have not identified 10 requests that occur 'rarely' then you will then need to look at the 'occasionally' column and decide which of these are the most problematic requests you would like to change. Again, any that you identified as important to you will need to be thought about carefully.

An important point you will also need to think about is the number of times you ask your child to comply to that request on any given day. For the purposes of this project it is best to **select low-*p* requests that are problematic (i.e. compliance rarely occurs), and are also requests you make quite often**. Otherwise, there may be little opportunity to change compliance. You may find greater satisfaction with the procedure if you choose low-*p* requests that you ask frequently. The 10 low-*p* requests you choose now will be monitored for the next five days to decide what the final three will be.

Make Requests the Same Way Each Time

Once you have chosen your low-*p* and high-*p* requests, you will need to think about how they will be phrased when you make them . **You are asked to make each request in a standard and consistent way during the project**.

Phrase Requests in a Positive Way

It is also **very important that they are phrased in a positive way.** Such requests are called 'do' rather than 'don't' requests, e.g. "please stand up" rather than "please don't

sit on the floor" or "please stop playing with the water" rather than "don't play in the sink". Making 'do' rather than 'don't' requests has been shown to increase levels of compliance so it is important that they are phrased this way. This point is also important to ensure consistency throughout the project.

Use Appropriate Language

Also, it is very **important that you use language that is appropriate for the developmental age of your child**. If your child has the developmental age of a seven year old, then it is not appropriate to use requests suitable for a two year old, or vice versa. Neither you or your child will appreciate this very much. As a parent you will have the best idea of the language ability of your child, so be sure to phrase your requests appropriately.

Get Your Child's Attention First

When you make a request try to make sure you have your child's attention first. Make sure they can hear you. Best of all, make sure they can see you when you make a request. Use your child's name when other people are around so they know you are talking only to them. This will avoid confusion. Finally, try to avoid making 'group' requests like "everyone come to dinner". Instead, make the request to your child and then everyone else.

Use 'Please'

Finally, try to include the word "please" when you write and make your requests. This makes them sound less like an order or command. If they are not already doing so, it is also highly likely that your child will also start to use "please" when they make a request of you.

Please write the 10 low-*p* requests you have chosen in the space provided on the next page.

Low-*p* Requests

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

High-*p* Requests

You will now have to use the same procedure to make a list of high-*p* requests, except this time you will need to choose 10 of the requests that you identified as being complied with 'almost always' or on 76-100% of occasions.

When choosing your 10 high-*p* requests it is important to think about how easily and quickly your child can complete the request. You will also need to think about how much they enjoy doing so. As explained earlier the high-*p* request sequence will require you to make three high-*p* requests spaced about 10 second apart. So it is best that they are quick and fun, and also meaningful to you and your child. Good examples of high-*p* requests that have been used in other studies are "give me five" or "please give me a hug" or "show me your toy".

If you have not ticked enough high-*p* requests in the 'almost always' column, then you will need to look in the 'usually' column to make up your list of 10.

Please write the 10 high-*p* requests you have chosen in the space provided on the next page.

High-*p* Requests

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Important Points to Remember

- Choose low-*p* requests that are problematic for you and your child, and that occur frequently.
- Choose high-*p* requests that are quick, easy and enjoyable for you and your child.
- Remember to make your requests in a positive ('Do') fashion.
- Use language appropriate to the age of your child when you make requests and try to use "please".

Congratulations! You have now completed the first section of the project and it is now time to start to monitor these requests. This is will be done in Section Two.

Section Two

Monitoring Low-*p* and High-*p* requests

Part One

Overview

In this section you will be monitoring compliance with the 10 high-*p* request and 10 low-*p* requests that you chose in the first section. This is to find the levels of compliance with the low-*p* and high-*p* requests that exist at the moment. You will be keeping track of these requests for five consecutive days. These days will be next Monday through to the following Friday. After this you will then select the final three low-*p* requests and a pool of five high-*p* requests to be used in the remainder of the project.

Procedure

To keep a record of compliance with the high-*p* and low-*p* requests you will need to complete the forms in the booklet titled "Things to Keep Track of". These forms have been designed so they are easy to follow and to use.

On the front page of the booklet there are spaces to write in the requests you will be keeping track of. This is to help you remember what requests you will be monitoring. Please do this now.

Inside the booklet you will see that there is a separate box for each of the ten low-*p* and ten high-*p* requests. The next thing you need to do is write in a few words to remind you which box belongs to which request. This is shown in the example below. Please do this now.

Example

Request 1: *Please put away your toys Michelle*

																% COMPLIANCE
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

Before you start to monitor the low-*p* and high-*p* requests you have chosen, there are a few points you will need to think about. These are listed below.

Other People Asking the Requests

It is perfectly fine for your child's other carer(s) (Partner, Mother, Father, Step Mother, Uncle, Childminder, etc) to ask the requests, and you are encouraged to have them do so. When they do make a request, simply mark compliance or noncompliance as you have been shown. In addition, you will need to make a note on the record by placing that persons first initial in the box as well.

Agreement Checks

You will also need to make agreement checks. An agreement check is when a second person *independently* checks to see if compliance to a request occurs. When an agreement check is made, simply place a second '√' or 'X' in the box as indicated by the second person. Try to get at least one agreement check a day.

It does not matter if the agreement checks are not the same each time. However, if they appear to be different two or three times in a row then please contact the researcher.

Staging

When making a request it is important they are not 'staged'. 'Staging' is where you purposely create a situation where you will need to ask a particular request. For instance, giving your child something they are not supposed to touch, just so you can tell them to put it down. Just make the high-*p* and low-*p* requests as they naturally occur during the course of the day.

Descriptive Praise

Follow each instance of compliance with descriptive praise as you were shown at the start of the project e.g., "Thank you Paul, you were a good boy for staying in your chair as I asked". At this stage **just follow your normal routine if noncompliance occurs.**

How to Fill Out the Form

The way you will be filling out your compliance record is very straight forward, just follow the steps listed below.

Recording What Happened

There is a sequence you will need to go through each time you make a request throughout the day.

1. Make the request.

2. Count to 10 to yourself.

3.	If your child begins to comply with your request within 10 seconds, and completes the request within a reasonable time, **then** Give descriptive praise	Mark a '√'
4.	If your child does not begin to comply within 10 seconds	Mark a 'X'
	OR	
5.	If your child starts to comply, but doesn't complete the request with a reasonable time	Mark a 'X'

Recording Who Made the Request

6. If another person made the request put their initial next to the '√' or the 'X'.

Recording an Agreement Check

7. Place a second '√' or a 'X' in the box if an agreement check was made.

You will need to complete this sequence every time you make a high-*p* or low-*p* request for five days in a row.

Keep the booklet in a handy place - on the kitchen bench or on the fridge for example. Tie a pen or pencil to it so you always have one when you need it.

If you have any questions please contact the researcher.

Example of a Form Filled Out

Below is a completed example of a compliance record.

Request 1: *Please put away your toys Michelle* **% COMPLIANCE**

1	X	X	X✓	X	✓M	X	X	X	9	10	11	12	13	14	15	25%
2	X	X	X	X⁴X	X	XM	7	8	9	10	11	12	13	14	15	0%
3	X✓	X	X	✓	X	6	7	8	9	10	11	12	13	14	15	40%
4	X	✓	X	X	✓M	X	X	8	9	10	11	12	13	14	15	28·6%
5	X¹X	X	X	XM	✓	✓	7	8	9	10	11	12	13	14	15	50%

TOTAL 143·6%

From this example it can be seen that the low-*p* request "Please put away your toys Michelle" was asked 8 times on day 1, and that compliance occurred on 2 of these times. An agreement check was performed the third time the request was asked that day. Also, the fifth time this request was made it was asked by Michelle's other carer, which was marked with their initial. On day 2 this request was asked 6 times, all of which resulted in noncompliance. A reliability check was not performed on this particular request this day. Again, Michelle's other carer made the request the sixth time. As you can see the record was filled out in a similar way for the remaining three days.

Important Points to Remember

- Remember the definition of compliance.
- Indicate compliance with a '√' and noncompliance with a 'X'.
- Remember to give descriptive praise for compliant behaviour.
- Try not to 'stage' the requests.
- Mark requests made by the child's other carer with their initial.
- Mark reliability checks with a second '√' or 'X'.

Problems

What if I forget to fill out the record?

If you forget to fill out the record just miss it out and try to remember the next time you ask a request. Please do not make up any data.

What if my child is sick that day?

This is ok. Just make a note in the record booklet. If you do make a request, just record it as you normally would.

If you are unsure at this point about what to do, then please contact the researcher before you start to monitor your high-*p* and low-*p* requests.

Remember to start monitoring next Monday.

Part Two

Now that you have monitored compliance with the high-*p* and low-*p* requests you can go on to select the final requests to be used for the rest of the project.

To do this you will need to calculate 'percentage compliance' for each of the 10 high-*p* and 10 low-*p* requests. This isn't very difficult and the manual takes you through it step be step.

Example

Using the example below we will now record the percentage compliance for this request.

Request 1: *Please put away your toys Michelle*

																% COMPLIANCE
1	X	X	$\surd^3$	X	$\surd_M$	X	X	X	9	10	11	12	13	14	15	25%
2	X	X	X	X^4X	X	X_M	7	8	9	10	11	12	13	14	15	0%
3	$\surd\surd$	X	X	$\surd$	X	6	7	8	9	10	11	12	13	14	15	40%
4	X	$\surd$	X	X	$\surd_M$	X	X	8	9	10	11	12	13	14	15	28·6%
5	X^1X	X	X	$\surd_M$	$\surd$	$\surd$	7	8	9	10	11	12	13	14	15	50%
															TOTAL	143·6%

Steps

1. Count up the number of requests you made for the day you want to calculate percentage compliance. This can be done quickly by looking at the highest number printed in the box which has a '√' or a 'X' for that day. In the example above, on day 1 this is 8.
2. Count the number of boxes with a '√'. In the example above there are 2 boxes which contain √'s, but there are 3 √'s in total. It is important that you count the number of boxes which contain √'s, not the total number of √'s.
3. Look on page 42 of your workbook or inside the cover of your booklet you will see a Percentage Compliance Table. You will use this table to work out the percentage compliance. There is also a smaller table printed on the next page which we will use for this example.

4. Looking at the percentage compliance table, run a finger *across* the top line to the total number of requests that were made for that day (the number of boxes which contained a '√' or a 'X'). In the above example this was 8.
5. Now, run a finger *down* to the number of requests that were complied with (the number of boxes which contained a '√'). In the example this was 2.
6. The box where the two fingers meet is the percentage compliance for this request. In the above example this is 25%.
7. Write this number at the end of the line in your record booklet.

NUMBER OF TIMES REQUEST WAS MADE
(NUMBER OF BOXES MARKED WITH A '√' OR A 'X')

ER OF COMPLIANT RESPONSES
UMBER OF BOXES
RKED WITH A '√')

	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0
1	100	50.0	33.3	25.0	20.0	16.7	14.3	12.5	11.1	10.0
2		100	66.7	50.0	40.0	33.3	28.6	25.0	22.2	20.0
3			100	75.0	60.0	50.0	42.9	37.5	33.3	30.0
4				100	80.0	66.7	57.1	50.0	44.4	40.0
5					100	83.3	71.4	62.5	55.6	50.0
6						100	85.7	75.0	66.7	60.0
7							100	87.5	77.8	70.0
8								100	88.9	80.0

Please work out percentage compliance for each of the high-*p* and low-*p* requests now. If you have any questions then please contact the researcher.

Now that you have done that you need to add up the five percentage compliance values and write the total in the box at the bottom of the request. You can see this has been done in the example on the previous page.

It is now time to decide which requests will be used for the remainder of the project. To do this follow each of the steps below.

Low-*p* Requests

1. **Look at the totals of the percentage compliance for the ten low-*p* requests.**
2. **Looking at these totals, find the 3 smallest totals. Each total must be less than 200.**
3. **These are the 3 low-*p* requests that will be used for the rest of the project.**
4. **Write them in the space provided below.**
5. **If you do not have three low-*p* requests with total percentage compliance below 200, please call the researcher.**

1. _____
2. _____
3. _____

High-*p* Requests

1. **Look at the totals of the percentage compliance for the ten high-*p* requests.**
2. **Find the 5 highest totals. Each total must be above 400.**
3. **These are the 5 high-*p* requests to be used in the remainder of the project.**
4. **Write these in the space provided below.**
5. **If you do not have 5 high-*p* requests with totals above 400, please contact the researcher.**

1. _____
2. _____
3. _____
4. _____
5. _____

You have now selected the high-*p* and low-*p* requests that will be used for the remainder of the project. To help you remember the three low-*p* and the five high-*p* requests you will be making in the next phase, there is a form on the very last page of this workbook which has spaces for you to write these in. The form can then be placed on the fridge to remind you of which requests to make. Well done, it is time to move on to the next phase.

Section Three

Baseline and Graphing

Overview

From now on you will be only monitoring compliance for the three low-*p* requests that you selected in the previous section. You are monitoring these requests to record a baseline from which changes in the levels of compliance to these requests can be measured. Compliance will be measured in the same way as you did in the previous section using a similar recording sheet. You will also be graphing levels of percentage compliance for each of the three low-*p* requests so you can see how your child's behaviour changes over time.

Procedure

Forming the Baseline

If you look at the back of the workbook on page 42 you will see there is a "Low-*p* Request Compliance Record". These forms are similar to the ones you used in the previous section.

To fill in the record you need to write in the start date in the space provided on the first form. You will also need to write in the three low-*p* requests in the space provided. Compliance will be monitored in exactly the same way as it was in the previous section. You will need to start forming a baseline tomorrow. Do this for five days.

Important Points to Remember

- Remember the definition of compliance.
- Indicate compliance with a '√' and noncompliance with a 'X'.
- Remember to give descriptive praise for compliant behaviour.
- Try not to 'stage' the requests.
- Mark requests made by the child's other carer with their initial
- Mark reliability checks with a second '√' or 'X'.

Graphing

In your workbook on pages 48-50 there are three "Behaviour Graphs". There is one graph for each of the three low-*p* requests. Each graph has sections labelled 'Baseline', 'High-*p*', 'Fading' and 'Follow-up'. As you work through each of these stages you can fill out the graph to see how your child's behaviour changes.

The first thing you will need to do is copy the three low-*p* requests onto the three behaviour graphs. Across the bottom of each graph you will see that it is marked out in days (starting at day 6). This refers to the 'Day' that is printed for each low-*p* request in the "Low-*p* Request Compliance Record". On the left hand side of the graph you will see it is labelled '% Compliance'.

To fill in the graph, follow the steps below.

Each day,

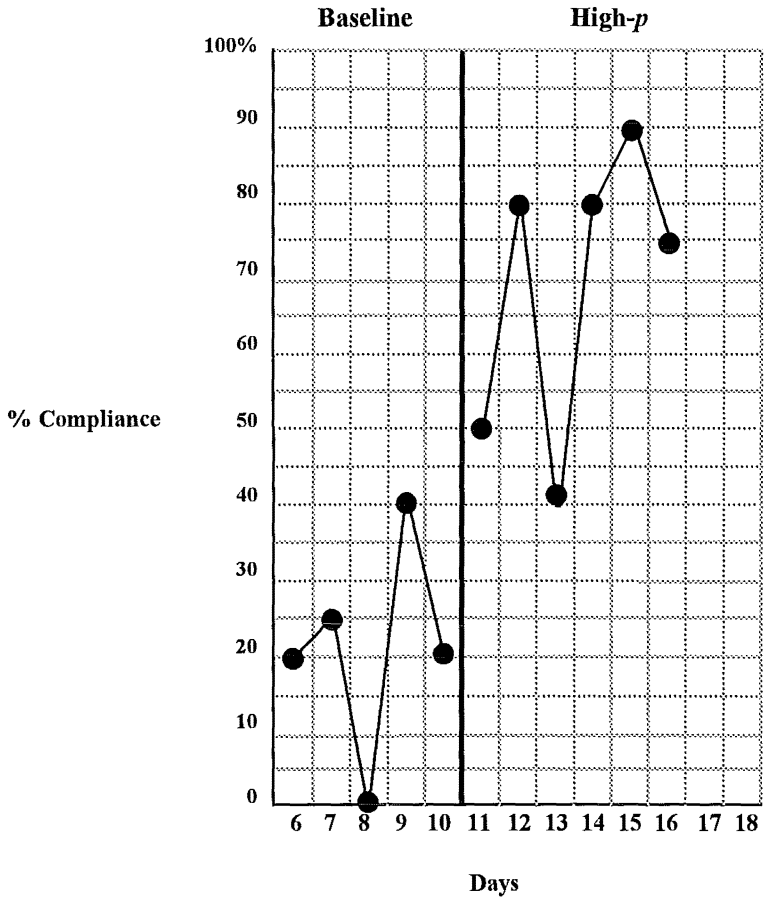
1. Look at the scale on the left hand side (% Compliance) of the graph and find the percentage compliance value for that low-*p* request for each day.
2. Mark on the graph for that day the percentage compliance value.
3. Join the dots together with a line.

You will need to do this each day for the rest of the project.

Remember to make sure you have the correct graph for each low-*p* request.

On the next page is an example of a completed behaviour graph.

Example



As you can see from the graph on day 6 there was 20% compliance, on day 7 there was 25% compliance and on day 8 there was 0% compliance to that particular request. When the high-*p* sequence was introduced compliance went up to 50% on day 11, up to 80% on day 12 and then back to 40% on day 13.

If you have any problems or questions about filling out the Behaviour Graph then please contact the researcher.

Section Four

Applying the High-*p* Sequence

Overview

You will now start to introduce the high-*p* sequence. This will be done in turn to each low-*p* request at four day intervals after five days of baseline. Five days after introducing the high-*p* sequence to the last of the low-*p* requests the fading sequence will begin.

Starting the High-*p* Sequence with Request One

You will be starting the high-*p* sequence with the first of the low-*p* requests on day 11. Four days later on day 15 you will start the high-*p* sequence with the second low-*p* request, and then with the third request another four days later on day 19. The high-*p* sequence is staggered in this way so we can compare what is happening between requests. On day 24 you will be starting the fading sequence.

You have already been shown how to use the high-*p* sequence by the researcher, but here are the steps you need to take as a reminder.

1. Start the high-*p* sequence with the first low-*p* request only.
2. Choose three requests at random from the pool of five requests you wrote on page 52 for the high-*p* sequence. You may use different requests each time.
3. Space the high-*p* requests no more than 10 seconds apart. Count the 10 seconds to yourself.
4. Give the low-*p* request no more than 5 seconds after the last high-*p* request.
5. Avoid talking to your child between the last high-*p* and low-*p* request.
6. Record compliance with a '√' or a 'X' on the record sheet.
7. Keep recording compliance the other low-*p* requests.
8. Do not record compliance to the high-*p* requests.
9. At the end of the day work out the percentage compliance for each request and mark it on the graph.

Continuing the High-*p* Sequence with Request 2.

10. After four days (on day 15) start the high-*p* sequence with the second low-*p* request.
11. Start the next record sheet.
12. Keep monitoring all three low-*p* requests.
13. Repeat steps 2 → 9.

Continuing the High-*p* Sequence with Request 3.

1. After four more days (on day 19) start the high-*p* sequence with the last low-*p* request.
2. Start a new record sheet.
3. Monitor compliance to all three low-*p* requests.
4. Repeat steps 2 → 9.
5. Use the high-*p* sequence for five days.
6. Start the fading sequence on day 24.

Important Points To Remember

- If noncompliance occurs to the first high-*p* request then stop and try again in approximately 1 minute.
- Give descriptive praise to all instances of compliance (high-*p* and low-*p*).
- Ignore noncompliance and avoid eye contact with your child.
- Try not to 'stage' the requests.
- Mark requests made by the child's other carer with their initial
- Mark agreement checks with a second '√' or 'X'.

Remember to keep filling in the behaviour graph.

You will be starting the fading sequence on day 24, so be sure you read the next section before then.

If you have any problems or questions about the high-*p* sequence then please contact the researcher.

Section Five

Fading the High-*p* Requests

Overview

After five days with the high-*p* request sequence applied to all three low-*p* requests it is time to fade out or remove the high-*p* requests **gradually**. You will be doing this first by gradually reducing the number of high-*p* requests and then by increasing the time between each request. The fading process will take 10 days. By the end, you will be presenting the low-*p* request alone without any high-*p* requests.

Procedure

The fading sequence will occur in five stages starting on day 24. **Each stage will be two days long.**

Days 24 & 25 - Reduce the number of high-*p* requests from three to two.

- In the first stage you are to continue with the high-*p* sequence as you have been doing. The only difference is that you will now only be issuing two high-*p* requests.
- Remember the high-*p* requests are spaced about 10 seconds apart.
- Give the low-*p* request 5 seconds after the last high-*p* request.
- Avoid talking to your child between the last high-*p* and low-*p* request.
- Monitor and graph compliance as you have been doing.
- Give descriptive praise for compliance.
- Ignore and avoid eye contact for noncompliance.

Days 26 & 27 - Reduce the number of high-*p* requests from two to one.

- This stage is the same as stage one, except you now only issue one high-*p* request.
- Give the low-*p* request after 5 seconds.
- Avoid talking to your child between the last high-*p* and low-*p* request.
- Monitor and graph compliance as you have been doing
- Give descriptive praise for compliance.
- Ignore and avoid eye contact for noncompliance.

Days 28 & 29 - Increase the time between the high-*p* request and low-*p* request from 5 to 10 seconds.

- For this stage of the fading sequence you are to increase the length of time between the high-*p* and low-*p* requests from 5 seconds to 10 seconds.
- Avoid talking to your child between the last high-*p* and low-*p* request.
- Monitor and graph compliance as you have been doing.
- Give descriptive praise for compliance.
- Ignore and avoid eye contact for noncompliance.

Days 30 & 31 - Increase the time between the high-*p* request and low-*p* request from 10 to 15 seconds.

- During this stage you are to increase the time between the high-*p* and low-*p* request from 10 seconds to 15 seconds.
- Avoid talking to your child between the last high-*p* and low-*p* request.
- Monitor and graph compliance as you have been doing.
- Give descriptive praise for compliance.
- Ignore and avoid eye contact for noncompliance.

s 32 & 33 - Increase the time between the high-*p* request and low-*p* request from 15 to 20 seconds and add a distraction.

- In this final stage you will further increase the time between the high-*p* and low-*p* request from 15 seconds to 20 seconds.
- This time talk to your child during the 20 seconds between the high-*p* and low-*p* request.
- Monitor and graph compliance as you have been doing.
- Give descriptive praise for compliance.
- Ignore and avoid eye contact for noncompliance.

You have now finished the fading sequence. All that remains to be done is to see how well the procedure lasts over time. This is done in the follow-up section.

Section Six

Follow-up

Overview

In this phase you will continue to monitor compliance to the low-*p* requests alone. This is to see how well the increases in compliance you and your child have achieved last over time.

Procedure

The follow-up section is very similar to the first stage where you began monitoring low-*p* requests. All that is required is monitoring compliance to each of the three low-*p* requests for two days at 1, 3, 5, 8 and 12 weeks after the fading sequence has ended. Compliance is monitored in exactly the same way as you have been doing using the spaces provided on the low-*p* compliance record. Choose any two days within the week to monitor compliance. Remember to give descriptive praise for instances of compliance. Ignore instances of noncompliance and avoid eye contact. Don't forget to calculate percentage compliance for each request and plot this on the behaviour graphs. This will show you how well the increases in compliance have lasted.

Important Points to Remember

- Remember the definition of compliance.
- Indicate compliance with a '√' and noncompliance with a 'X'.
- Remember to give descriptive praise for compliant behaviour.
- Ignore and avoid eye contact for noncompliance.
- Try not to 'stage' the requests.
- Mark requests made by the child's other carer with their initial
- Mark reliability checks with a second '√' or 'X'.

Thanks. We can't thank you enough for completing this project. Hopefully you have enjoyed using the high-*p* procedure and it has had lasting effects on your child's levels of compliance. To find out a bit more about how you have found using the procedure a questionnaire will be sent to you. This will help the researcher to see how the procedure can be improved.

Now that the project is over it would be really good if you tried the procedure with some of the other low-*p* requests you identified. However, don't try to tackle all your problem requests at once. Just limit it to two or three as you have done in the project.

As you go on don't forget to keep giving descriptive praise for any compliant behaviour that occurs. This will help to ensure compliance keeps on occurring. If you find that compliance to your requests has dropped off over time you may need to give your child a booster by giving one high-*p* request before your problem request. If this works, then fade out the high-*p* request after a few days.

Once again, thank you for your time, patience and effort with this project.

PERCENTAGE COMPLIANCE TABLE

To find percentage compliance,

1. Run one finger *across* the top of the table to the number which equals the number of requests that were made.
2. Run another finger *down* the left hand side of the table to the number of requests to which compliance occurred.
3. Bring each finger either across or down.
4. The number in the box where they meet of the is the percentage compliance value.

NUMBER OF TIMES REQUEST WAS MADE
(NUMBER OF BOXES MARKED WITH A '√' OR A 'X')

NUMBER OF COMPLIANT RESPONSES
(NUMBER OF BOXES MARKED WITH A '√')

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	100	50.0	33.3	25.0	20.0	16.7	14.3	12.5	11.1	10.0	9.1	8.3	7.7	7.1	6.7
2		100	66.7	50.0	40.0	33.3	28.6	25.0	22.2	20.0	18.2	16.7	15.4	14.3	13.3
3			100	75.0	60.0	50.0	42.9	37.5	33.3	30.0	27.3	25.0	23.1	21.4	20.0
4				100	80.0	66.7	57.1	50.0	44.4	40.0	36.4	33.3	30.8	28.6	26.7
5					100	83.3	71.4	62.5	55.6	50.0	45.5	41.7	38.5	35.7	33.3
6						100	85.7	75.0	66.7	60.0	54.5	50.0	46.2	42.9	40.0
7							100	87.5	77.8	70.0	63.6	58.3	53.8	50.0	46.7
8								100	88.9	80.0	72.7	66.7	61.5	57.1	53.3
9									100	90.0	81.8	75.0	69.2	64.3	60.0
10										100	90.9	83.3	76.9	71.4	66.7
11											100	91.7	84.6	78.6	73.3
12												100	92.3	85.7	80.0
13													100	92.9	86.7
14														100	93.3
15															100

Low-*p* Request Compliance Record

Start Date: _____

√ = Compliance X = Noncompliance

Place a '√' or a 'X' in the appropriate box each time a high-*p* or low-*p* request is made

Days 6-10

Record compliance (Baseline) with all three low-*p* requests

***L-p* Request 1:** _____

																% COMPLIANCE
6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
9	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

***L-p* Request 2:** _____

																% COMPLIANCE
6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
9	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

***L-p* Request 3:** _____

																% COMPLIANCE
6	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
7	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
8	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
9	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

Days 11-14

Use the high-*p* sequence with request 1
Continue forming a baseline with requests 2 and 3

n-p Request 1: _____ % COMPLIANCE

11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
13	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

n-p Request 2: _____ % COMPLIANCE

11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
13	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

n-p Request 3: _____ % COMPLIANCE

11	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
12	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
13	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
14	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

Days 11-14

Use the high-*p* sequence with requests 1 and 2
Continue forming a baseline with request 3

H-p Request 1: _____ % COMPLIANCE

15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
17	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
18	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

H-p Request 2: _____ % COMPLIANCE

15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
17	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
18	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

H-p Request 3: _____ % COMPLIANCE

15	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
16	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
17	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
18	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

Days 11-14

Use the high-*p* sequence with all three requests

***N-p* Request 1** _____ **% COMPLIANCE**

19	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
21	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
22	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
23	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

***N-p* Request 2** _____ **% COMPLIANCE**

19	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
21	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
22	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
23	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

***N-p* Request 3** _____ **% COMPLIANCE**

19	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
21	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
22	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
23	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

Start Fading Out The High-*p* Sequence

Reduce the number of high-*p* requests from three to two.

w-p Request 1: _____ % COMPLIANCE

24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
25	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

w-p Request 2: _____ % COMPLIANCE

24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
25	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

w-p Request 3: _____ % COMPLIANCE

24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
25	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

Reduce the number of high-*p* requests from two to one.

w-p Request 1: _____ % COMPLIANCE

26	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
27	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

w-p Request 2: _____ % COMPLIANCE

26	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
27	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

w-p Request 3: _____ % COMPLIANCE

26	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
27	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

Increase the time between the last high-*p* and the low-*p* request from 5 to 10 seconds

w-p Request 1: _____ % COMPLIANCE

28	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
29	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

w-p Request 2: _____ % COMPLIANCE

28	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
29	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

w-p Request 3: _____ % COMPLIANCE

28	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
29	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

Increase the time between the last high-*p* and the low-*p* request from 10 to 15 seconds

w-p Request 1: _____ % COMPLIANCE

30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

w-p Request 2: _____ % COMPLIANCE

30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

w-p Request 3: _____ % COMPLIANCE

30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

Increase the time between the last high-*p* and the low-*p* request from 15 to 20 seconds and add a distraction

w-p Request 1: _____ % COMPLIANCE

32	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
33	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

w-p Request 2: _____ % COMPLIANCE

32	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
33	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

w-p Request 3: _____ % COMPLIANCE

32	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
33	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

tart recording Follow-up.

w-p Request 1: _____

																% COMPLIANCE
34	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
35	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
36	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
37	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
38	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
39	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
40	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
41	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
42	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
43	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

w-p Request 2: _____

																% COMPLIANCE
34	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
35	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
36	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
37	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
38	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
39	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
40	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
41	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
42	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
43	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

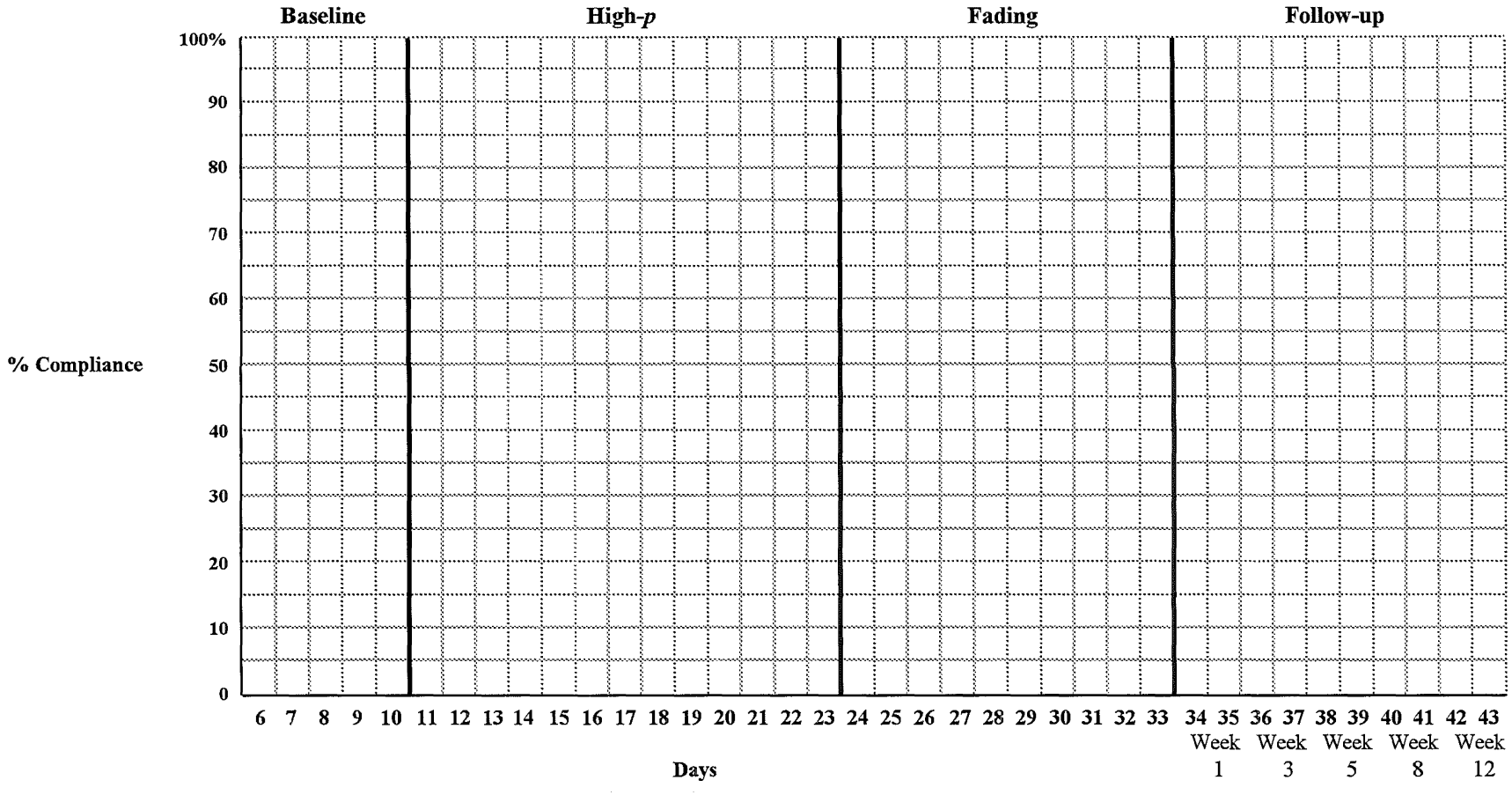
w-p Request 3: _____

																% COMPLIANCE
34	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
35	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
36	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
37	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
38	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
39	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
40	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
41	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
42	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
43	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

Behaviour Graph

Name: _____

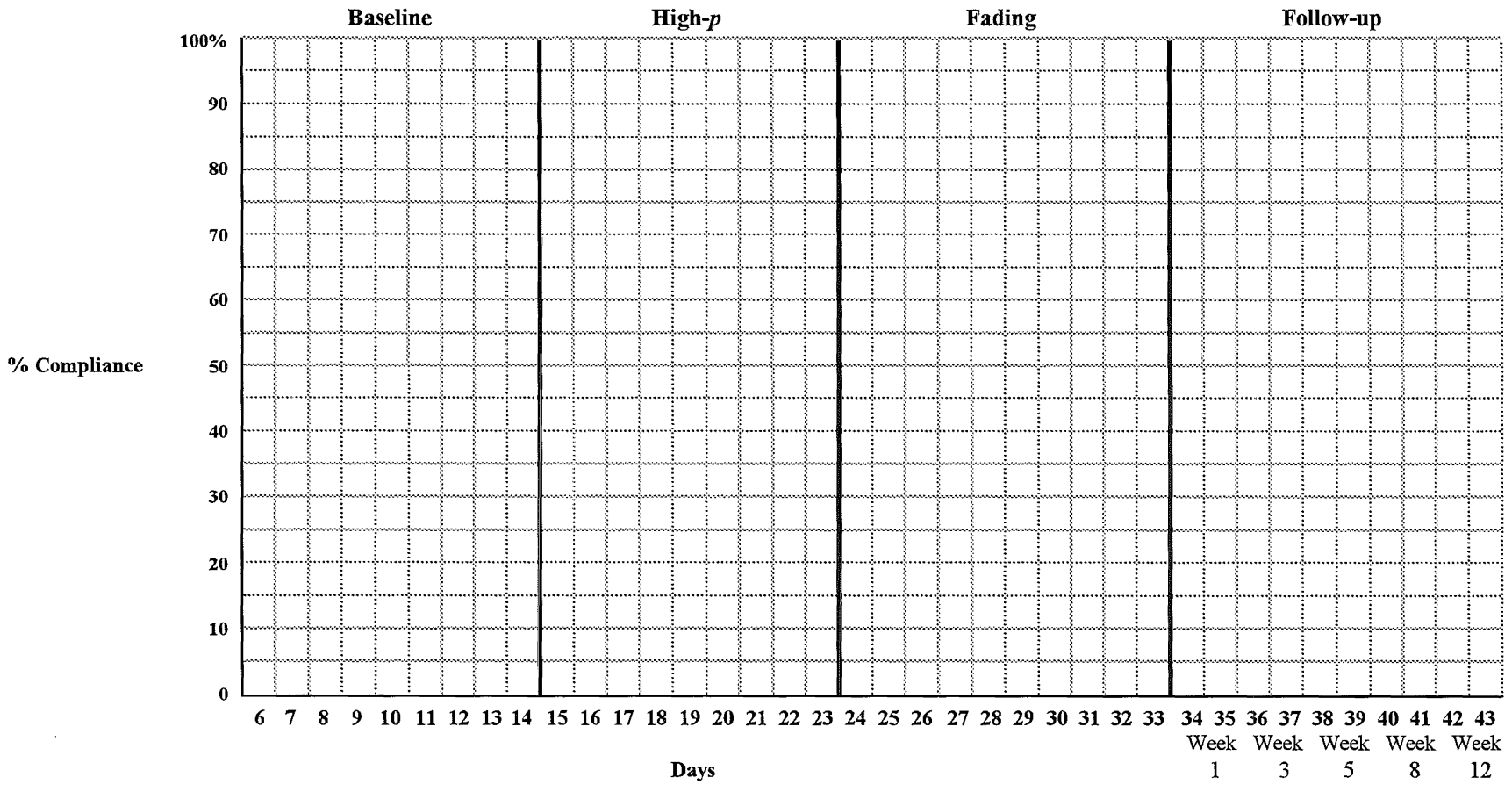
Low-*p* Request 1: _____



Behaviour Graph

Name: _____

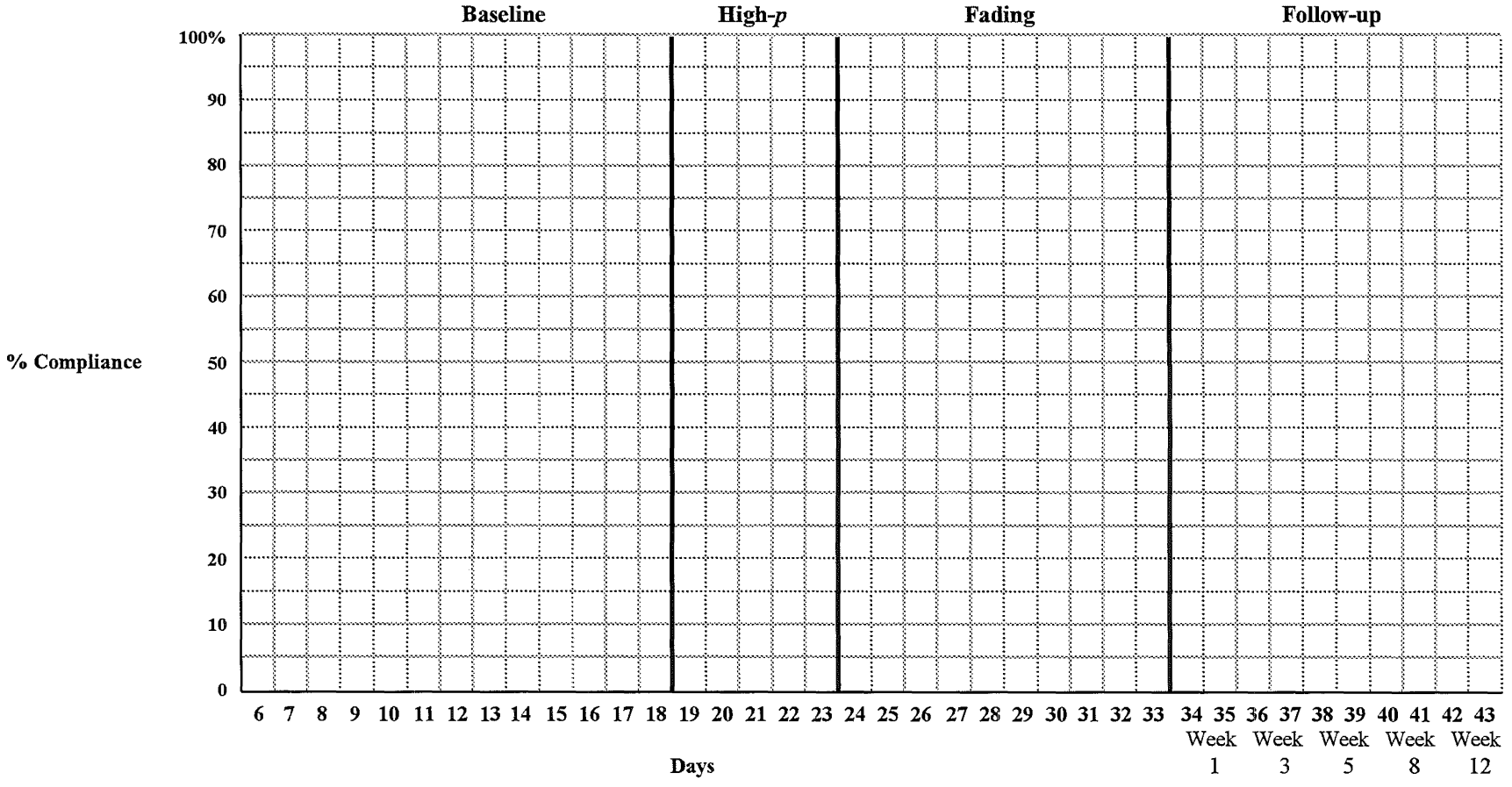
Low-*p* Request 2: _____



Behaviour Graph

Name: _____

Low-*p* Request 3: _____



Things _____ Loves To Do.

1. _____

2. _____

3. _____

4. _____

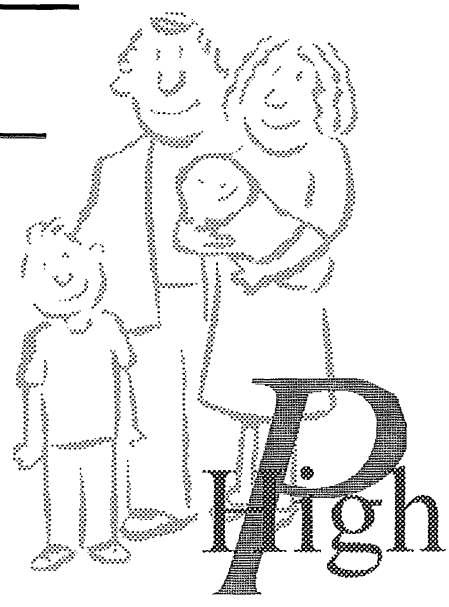
5. _____

Things _____ Is Going To Do Better.

1. _____

2. _____

3. _____



Appendix C

Thing to Keep Track of Booklet

Things To Keep Track Of

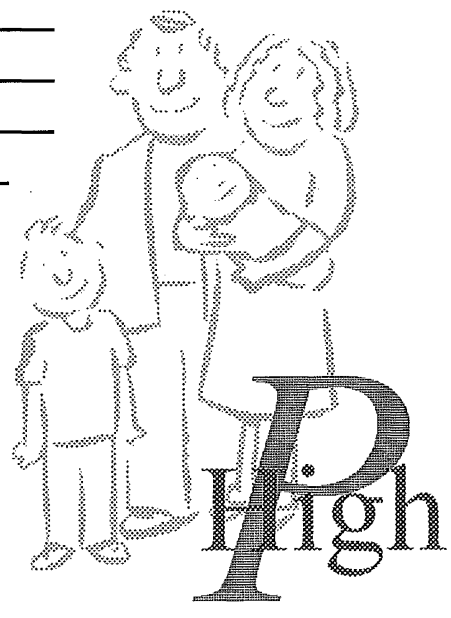
Date Started: _____

Low-*p* Requests

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

High-*p* Requests

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____



Researcher's Phone Number:

√ = Compliance X = Noncompliance

Place a '√' or a 'X' in the appropriate box each time a high-*p* or low-*p* request is made

low-*p* Request 1: _____ **% COMPLIANCE**

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	**3**	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

high-*p* Request 2: _____ **% COMPLIANCE**

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	**3**	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

low-*p* Request 3: _____ **% COMPLIANCE**

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	**3**	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

low-*p* Request 4: _____ **% COMPLIANCE**

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	**3**	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

-p Request 5: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

TOTAL _____

w-p Request 6: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

TOTAL _____

w-p Request 7: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

TOTAL _____

w-p Request 8: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

TOTAL _____

ı-p Request 9: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

w-p Request 10: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

gh-*p* Request 1: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

gh-*p* Request 2: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
ıY	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

)h-*p* Request 3: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

)h-*p* Request 4: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

)h-*p* Request 5: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

)h-*p* Request 6: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

h-*p* Request 7: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

)h-*p* Request 8: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

gh-*p* Request 9: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

gh-*p* Request 10: _____ % COMPLIANCE

	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Y	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

TOTAL _____

Appendix D

Consumer Satisfaction Questionnaire

HIGH-*P* PROGRAMME EVALUATION QUESTIONNAIRE

Thank you for participating in this study, the information you have helped collect will in turn be used to help others in situations similar to your own. To help us improve the high-*p* intervention we ask you now to take some time and fill out this short questionnaire. The answers you provide will give us further information on how the programme can be improved in the future. Please answer all questions. We are interested in your honest opinions, whether they are positive or negative. In addition, we also welcome any comments and suggestions you would like to make. Thank you very much, we greatly appreciate your help.

Please circle your answer

1. Overall, how satisfied are you with the high-*p* intervention?

4	3	2	1
Very satisfied	Mostly satisfied	indifferent or mildly dissatisfied	Quite dissatisfied

2. Did you find the high-*p* intervention difficult?

4	3	2	1
No, definitely not	No, not really	Yes, generally	Yes, definitely

3. Was the high-*p* programme what you expected?

1	2	3	4
No, definitely not	No, not really	Yes, generally	Yes, definitely

4. Did the high-*p* programme meet your needs?

4	3	2	1
Yes, definitely	Yes, generally	No, not really	No, definitely not

5. Would you recommend this programme to someone in a situation similar to your own?

4	3	2	1
Yes, definitely	Yes, generally	No, not really	No, definitely not

6. I feel that using the high-*p* intervention to treat my child's compliance problems in the home is

4	3	2	1
Very positive	Positive	Negative	Very negative

7. How confident are you that you could use the high-*p* intervention to treat other compliance problems in the future?

1	2	3	4
Definitely not confident	Not very confident	Confident	Very Confident

8. My overall feeling about the high-*p* programme for my child and family is

4	3	2	1
Very Positive	Positive	Negative	Very Negative

9. Did you find the modeling / role-playing section of the programme was helpful?

4	3	2	1
Yes, definitely	Yes, generally	No, not really	No, definitely not

10. Do you feel more therapist contact is necessary?

1	2	3	4
Yes, definitely more contact is necessary	More contact would have been helpful	No, therapist contact was adequate	No, definitely not

11. How stressful did you find the programme?

1	2	3	4
Very stressful	Somewhat stressful	Indifferent	Definitely not stressful

12. Did you find the handbook hard to follow?

1	2	3	4
Yes, definitely	Yes, generally	No, not really	No, definitely not

Comments _____

13. Did you find it difficult to monitor your child's noncompliance?

1	2	3	4
Yes, definitely	Yes, generally	No, not really	No, definitely not

Comments _____

14. Did you find any aspect of the procedure / programme difficult or unnecessary?

15. How do you think the high-*p* programme could be improved?

16. Any further comments.

Thank you.